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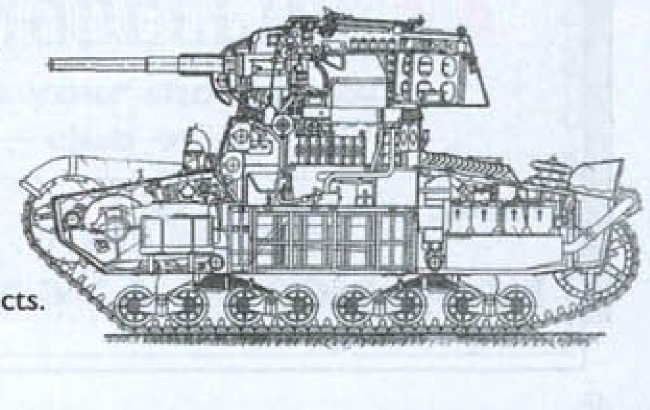
COVER: Steve Zaloga's Trumpeter 1:35 scale SA-6 kit. The article begins on page 16 in this issue and includes a photo-section on the full-size vehicle as a reference source for modellers.

First of a new four part series on the Russian T-26 light tank by Cookie Sewell begins in this issue on page 46.



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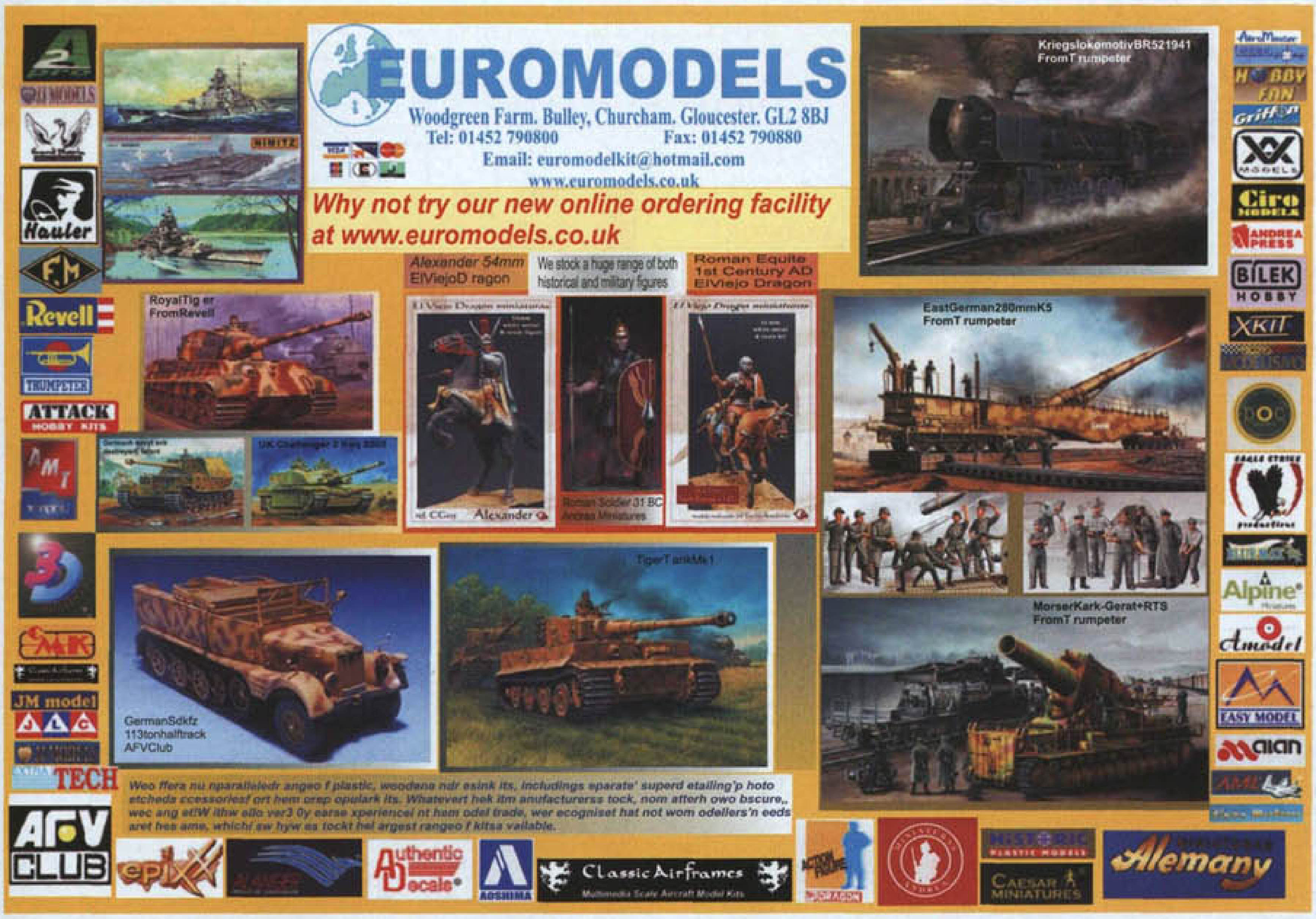
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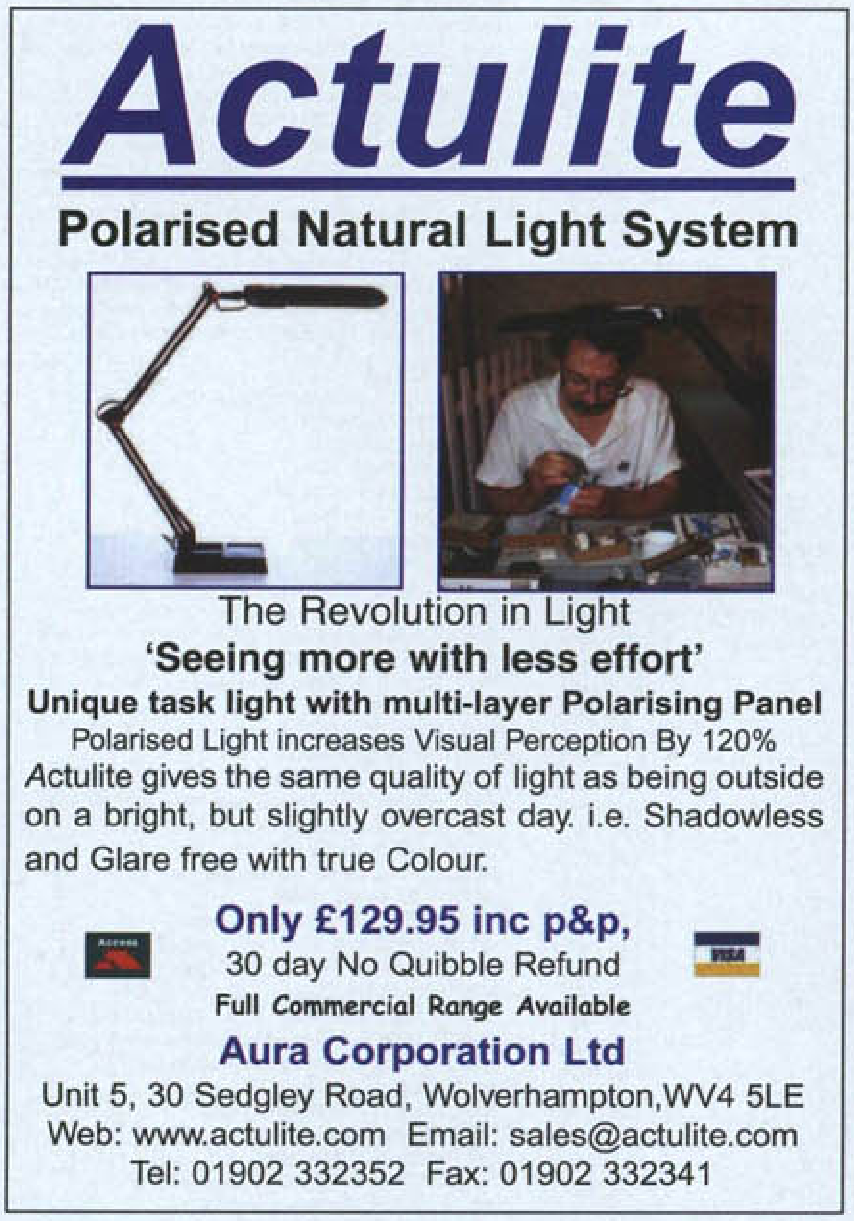

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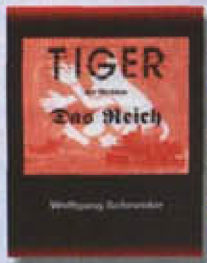

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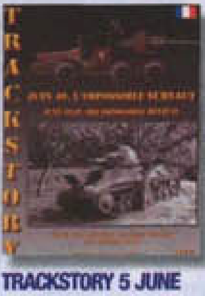

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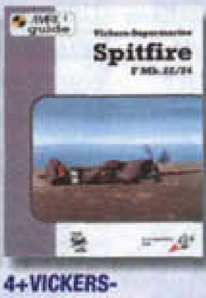

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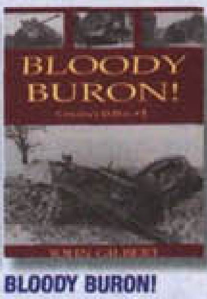

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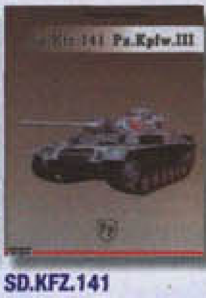

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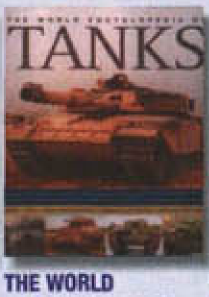

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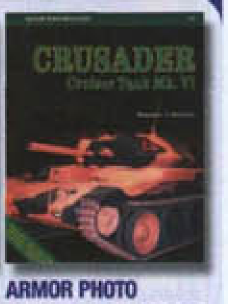

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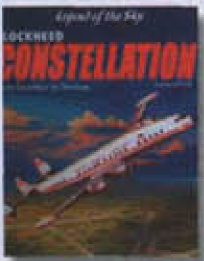

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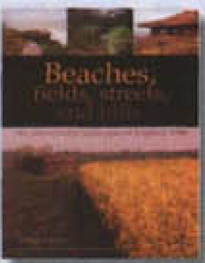

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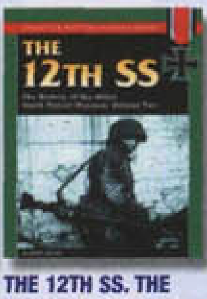

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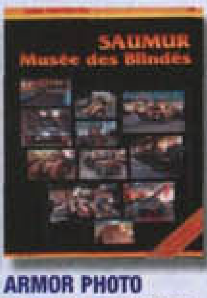

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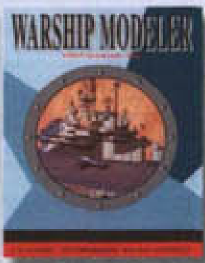

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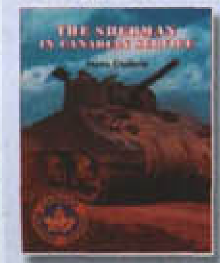

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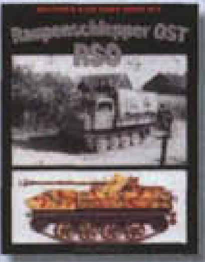

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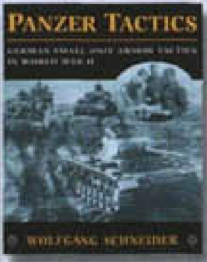

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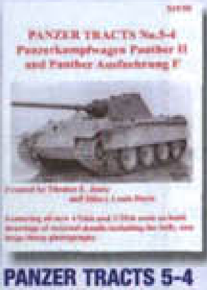

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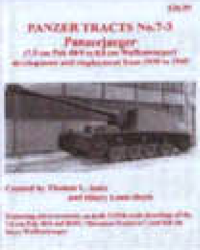

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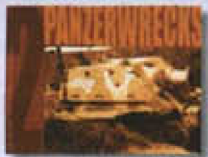

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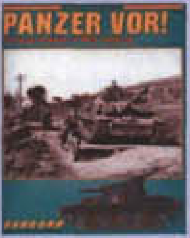

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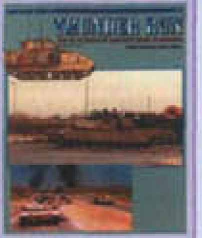

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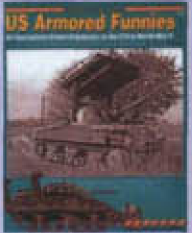

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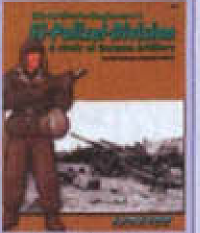

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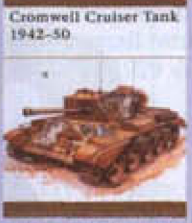

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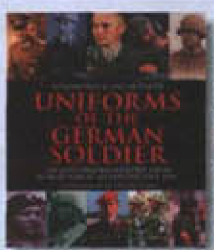

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TANKFEST 2006

This coming 25th June is to be the most explosive date in the Tank Museum calendar, as TANKFEST roars back to Bovington. The world's best variety of historic mobile tanks, featuring The Tank Museum's own unique collection of fighting vehicles, will be held over seven high-octane hours in the Museum arena.

Tank Museum Curator David Willey said; "TANKFEST is a special occasion as it is the only time that the public can see many of our less-common vehicles running. Indeed, this year we have some vehicles that have never run or been seen before at TANKFEST. Each of our displays are being given a special campaign theme - so visitors can get a real idea and comparison of the tanks that have faced each other in conflict since the North African campaign in World War Two."

The Tank Museum's major biennial event was last held over a May weekend in 2004, and saw almost 5,000 visitors ring the arena to see the world's most important collection of historic tanks brought back to life. Amongst these was the awesome World War Two German Tiger I tank, the world's only running example, which had been painstakingly restored and ran for the first time in almost 60 years to delight expectant crowds.

This year TANKFEST promises to offer both enthusiast and casual visitor something special, and is set to include; key vehicles from the history of armoured warfare, every British Main Battle Tank from 1944 to the present day and a superb collection of American, Russian and British vehicles. A unique group of German fighting vehicles and artillery, including vehicles loaned by private collectors will also feature and the Royal Armoured Corps will be in attendance with examples of the latest kit employed by the British Army on operations.

Realistic WW2 encampments displaying the wartime equipment, clothing and living conditions of British, American and German soldiers. A major WW2 combat re-enactment, featuring Allied infantry and armour assaulting German positions. Displays focussing on some of the major campaigns in the history of armoured warfare - North Africa 1942, Normandy 1944, Korean War, The Cold War and Desert Storm. Traders' stalls and sideshows will compliment the event.

The Tank Museum, which contains the world's finest collection of armoured fighting vehicles ranging from the first tank ever built, will also be fully accessible, brining the total number of vehicles on display to around 400. TANKFEST begins at 10am on Sunday 25th June 2006. For more information, (including traders and stall holders information) email tankfest06@tankmuseum.org or Tel: 01929 405096.

East of Scotland Model Show 2006

On Saturday 1st July, the International Plastic Modellers Society in Dundee will host this year's East of Scotland Model Show. This Show will be held in the Marryat Hall, Caird Hall Complex in Dundee City Centre from 10am to 4pm. Admission is £3 adults with children and concessions at £2. Family tickets (2+2) are available for £8. There will be an open competition, traders, branch displays and a Tombola. For more information on this IPMS show contact Nairn Barclay, 14 Strathmore Place, Broughty Ferry, Dundee, Scotland DD5 2PD. Tel: 01382 778509.

EUROMODELS

Readers should be aware that a new online shop for military modellers was set up on 20th April by Euromodels www.euromodels.co.uk with an impressive line up of injection moulded plastic and resin kits, vehicles, figures, accessories. Euromodels formerly dealt in boat kits only, but is currently expanding to stock other lines including military vehicles and figures.

BMSS Bristol on the move!

Well, not literally you understand - local householders need have no fear. The Bristol Branch of the British Model Soldier Society has changed the rendezvous for its monthly meetings to (very appropriately) The Guardsman public house, 11 Victoria Road, St Phillips, Bristol. The pub is just off Cattle Market Road and very close to Temple Meads Railway Station. The group meet at 7.30 pm on the first Wednesday of every month and anyone with an interest in military modelling will be assured of a warm welcome.

'Bugle Call', the Annual Show organized by the Bristol Branch will be held on Sunday 26th November, from 10am to 4.30pm at the Pavilion, North Parade Road, Bath. This really is one of the best shows in the country with a wide range of displays, competitions and trade stands. All this in the fine city of Bath with its shops, museums and beautiful architecture makes this an event not to be missed!
Further details on the Bristol Branch and Bugle Call from the Branch Representative,
Peter Sturgeon, Tel: 0117 973 2067.

MAFVA Nationals 2006

The Cambridge Branch MAFVA is pleased to announce that the 2006 UK MAFVA National Championships will be held on Sunday 18th of June 2006 at the Imperial War Museum, Duxford Airfield, Cambridgeshire in conjunction with the annual Duxford Military Vehicle Show. The competitions will include classes for MAFVA members and Open classes. For the one admission price (children under 16 go free), you get to see the Museum, the Military Vehicle Show and the Model Show, a Military Book Fair and a Flying Programme all for the same money. A day out for the whole family as well as the enthusiast. This year the Association have a marquee 160 x 50 feet which will be filled with model and book traders, MAFVA branch and other model club displays, and the competition tables. The organizers hope to encourage youngsters to enter the competitions, and entries will be free for them. It is hoped that they can provide a prize for every junior entry as an incentive.
This event is held by kind permission of the Imperial War Museum, Duxford with the full co-operation of the Vehicle Wing, Duxford Aviation Society who organize the Military Vehicle Show. For further information contact Paul Middleton, 39 The Leas, Baldock, Hertfordshire SG7 6HZ.
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The 2006 BMSS Annual Show Report by Michael Creese

The Annual Show organized by the British Model Soldier Society is always rather special and this year's built on the success of the Platinum Show of 2005. The hall, at the Royal National Hotel, was crowded all day with members and non-members with competitions are open to all. It is a chance to meet up with old friends and an opportunity to buy figures and all of the accessories that a modeller or collector might require. But above all it is the place to see the very best of British military modelling, to talk to the modellers, to admire their imagination and skill and to learn from them. To take just one example: in the non-military class there were two identical figures both equally well painted. But one modeller had had the imagination to take a longer base, add a tree stump topped by a bottle and surrounded by broken glass and produce the award winning Class 8 entry 'The Sheriff at his shooting practice!'

Mark Gilbert, Chris Parkin and Graham Sutch demonstrated their art in three very different areas of modelling, and displays were mounted by three of the Special Interest Groups of the Society: Bands, the Indian Army and Military Vehicles. One can only admire the sheer stamina required to produce not one, but three bands of the Light Brigade - and then learn that there are two more at home! The displays of models arranged by two individuals, Geoff Illsley and Derek Oakley were totally different in style. They have very different approaches to the hobby, but they share one thing in common - imagination. Derek concentrates on British subjects of the 19th century and his style might almost be called scrap-modelling because of his ability to take ordinary household items and turn them into fine models. His award-winning, "And in the morning..." (a British Legion standard bearer) typified this approach with a tombstone formed from a self-ahesive plastic cabinet door hinge and a wreath of poppies based upon a brass screw cup. His delightful group of Army PT instructors were all converted from a single basic figure. Military modelling can have a sense of humour and does not have to be expensive! Geoffrey is Chief Judge at Euro-Militaire and his work is well-known. He tends to concentrate on models of the fair sex and his models of Audrey Hepburn and Vivien Leigh have often been illustrated but remain delightfully fresh. Talking to him, one learns how he has been able to take a relatively cheap commercial piece and with a little work and high painting skills produce a little gem. 'Guardian Angel' - Nelson and Emma Hamilton - entered in Class 3 was a stunning piece of work which quite deservedly won not only a Gold medal, but also the President's Medal.

In the competitions, Class 1 for unconverted single foot figures was the most popular with over 40 entries with a strong emphasis on figures of the medieval period. One of the virtues of the Gold/Silver/Bronze award system is that every model is judged on its merits so that a relatively inconspicuous piece like 'Panzer Commander, France 1940' which might be overlooked amongst its more colourful competitors is duly recognized and rewarded. Black is the most difficult colour to paint and there were several other fine examples of how to do it in the competitions, for example, the Gold medal-winning 5th Regiment, Death's Head, Hussar. The World War One RFC Pilot was another winning unassuming figure exquisitely painted which might have been overlooked. Some commercial figures become particularly popular with modellers; 'Prussian Hauptmann 1870' produced by Elite is one such and we had a beautifully painted example here. The Line Infantry Grenadier 1812-15 was a rare example of the Napoleonic period figure in the class with the white (the second most difficult colour to paint) uniform very well handled. Amongst the medievals, Peter Corbett was particularly attractive with his yellow tabbard and shield well spattered with mud and gore. It is easy to overdo this effect but this modeller had it just right.

To everyone's surprise, Class 2 for mounted figures had just two entries, both Naploeonic, but Class 3 for vignettes (two or three figures) was well-supported with Geoff Illsley's 'Guardian Angel' the undoubted star of the show. The Italian parachutists were very attractive and Fuentes D'Onoro with a very well-presented British infantryman and French grenadier raised an interesting technical point. Was the latter dead or alive? If dead, the model should have been placed in Class 1! Figures painted in the more traditional 'toy figure' style found a home in Class 4 for groups and dioramas and it was pleasing to see Alex Sim's 'Royal Signals Cable Cart, 1920' receiving due recognition. Allied Commanders, Victory Parade, Berlin 1945 was an unusual subject well executed and perhaps deserved better of the judges. Class 5 for AFVs unaccompanied by figures contained a number of superb entries. This is a highly specialized field of military modelling with a bewildering range of kits and accessories available as well as scratch building. A non-specialist's eye was caught by the large-scale 'Mark V Male Tank 1918' on a scenic base and by the Renault Ambulance.

Class 6 for converted and scratch built figures had only four entries, but they were all fine models. Reference has already been made to "And in the morning...." and the Belgian Carabinier with dog-cart is another unusual subject. The Gold medal winner Cavalier, King's Lifeguards was based upon the Andrea figure of Athos and was accompanied by a fine set of photographs showing the work which had gone into producing the model.

There were two outstanding gold medal entries in Class 7 for busts: 9th Regiment, Death Hussars and Rainy Mountain Charlie which turned out to be by the same painter. Chelsea Pensioner 'Jacko' with his finely painted medals was a good runner-up, but perhaps the eyebrows were a little too heavy. In Class 8 for non-military models we had two large scale bucking cowboys, one on a horse and one on a bull. Ninja (beautifully painted black clothing again), The Highwayman and an untitled model of what appeared to be a country gentleman out shooting - Gainsborough inspired perhaps - were all worth close inspection. Brian Hornick's 'A Night Under the Stars: France 1930' was another of his large eye-catching presentations. Finally we had Class 9 for the Juniors (under 16) and it was good to see a number of entries on the table, mainly of wargame 'fantasy' figures. Leglas and Gimli from *Lord of the Rings* won a Gold Medal here.

On the BMSS Support Services Stand were the two latest figures to join the Members' Collection. Continuing the theme of British commanders, Alan Caton has mastered The Duke of Wellington and Uxbridge. The Duke was not noted for colourful uniforms, but his colleague is in a very flamboyant hussar uniform with full-dress shabraque on his mount.

Organizing a show like this requires a great deal of effort from many people so many thanks to all of the traders who, marshalled by Alex Riches, came along to support the Society, to the demonstrators and whose who organized the displays, to Arthur Smith and his team of stewards, to our official photographer Eric Sanger, to George Hanger who extorted money so gracefully for the raffle, to Paul Richardson, our new Chief Judge, his assistant Ian Duthie and the team of judges and last, but by no means least, to Paul Vickers who planned the room layout, as well as producing the programme, posters and publicity. Planning has already stated for 2007 - see you there!

For further information, on the BMSS Annual Show please contact Michael Creese on 01728 602 746.

Euro Militaire 2006

Euro Militaire will be held over the weekend of 23rd - 24th September 2006 at the Leas Cliff Hall in Folkestone Kent. The following traders have booked to attend - there will be more, including some surprises...

Frank Miniatures	Germany
Jorge Lopez Miniatures	Spain
Lou Stener	UK
New Model Army	UK
Avid Reader	UK
Scotia Models	Scotland
Der Bunte Rock	Germany
SB Models	UK
Accurate Armour	Scotland
Cromwell Models	Scotland
Debra Raymond	UK
Pol Models	UK
Optum Hobby Aids	UK
LSA Models	UK
AFV Modeller	UK
DF Grieve	UK
PDI Model Supplies	UK
Name-It	UK
Small Shop EU	UK
Pegaso	Italy
Alpine Miniatures	USA
Osprey	UK
Milicast	UK
Great North Roads	UK
Imperial Gallery	UK
Andrea Miniatures	Spain
Mission Models	USA
PiLiPiLi	Belgium
Griffin	UK
Military Modelcraft	UK
Historex Agents	UK
Victory Miniatures	UK
Stormtrooper	UK
Military Modellbau	Germany
Scale Link	UK
Hornet/Wolf	UK
Armstrong Bases	UK
Deluxe Materials	UK
Resicast	Belgium
Bonapartes	UK
HP Models	Germany
Des Kit	France
Azimut	France

DESPATCH

Readers' Letters and E-mails

● The Editor welcomes readers' letters and e-mails for publication which must always be accompanied by the writer's full name and address. The address will be published in full if the letter or e-mail is interpreted as a request for information to the readership. Otherwise, only the writer's full name will be published.

● Letters and e-mails are not, under any circumstances, altered or severely edited; however, they may be shortened because of space limitations. The Editor is not necessarily in agreement with the views expressed in published readers' correspondence.

● Letters and e-mails to the Editor intended for publication should be addressed to:

The Editor
'Despatch'
Military Modelling
PO Box 6017
Leighton Buzzard
LU7 2FA

● E-mail: editor@militarymodelling.com
ken.jones@encanta.co.uk

T-80 details

Dear Sir,
After my first letter to *Military Modelling* (Despatch Vol.36 No.1) about T-80Y, I have done some research into T-80B production batches and can help fellow modellers who want to build the T-80B.

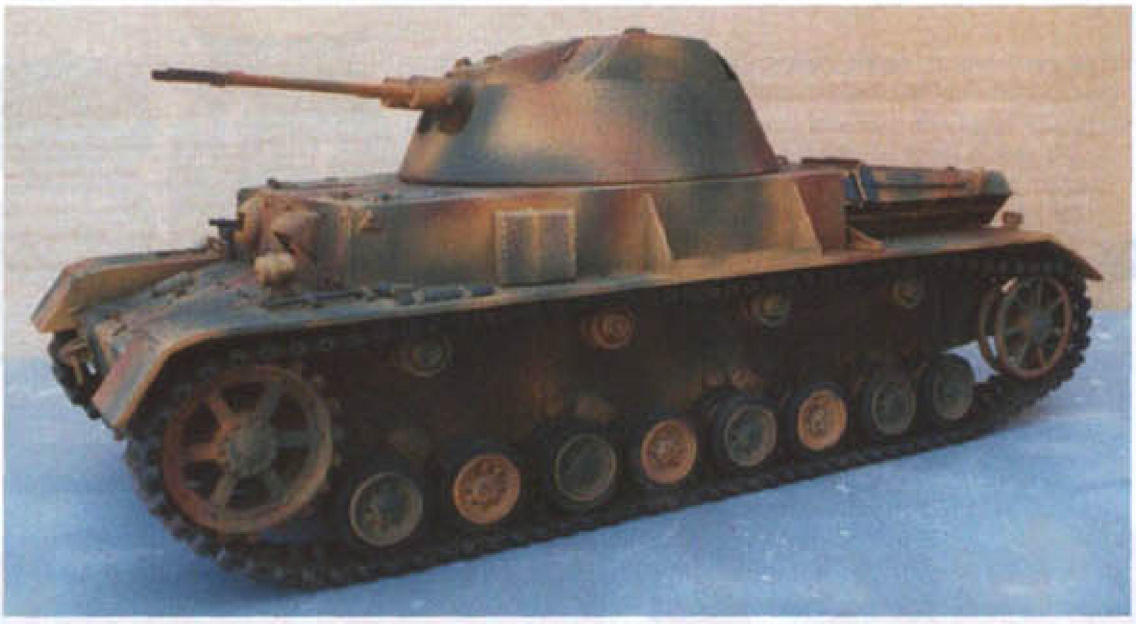
My analysis is: the T-80B of the first production batch have a gap under the *Kobra* box; the driver's hatch has two periscopes, like those on T-64A/B, has different frontal skirts on the hull and a slightly different commander's cupola.

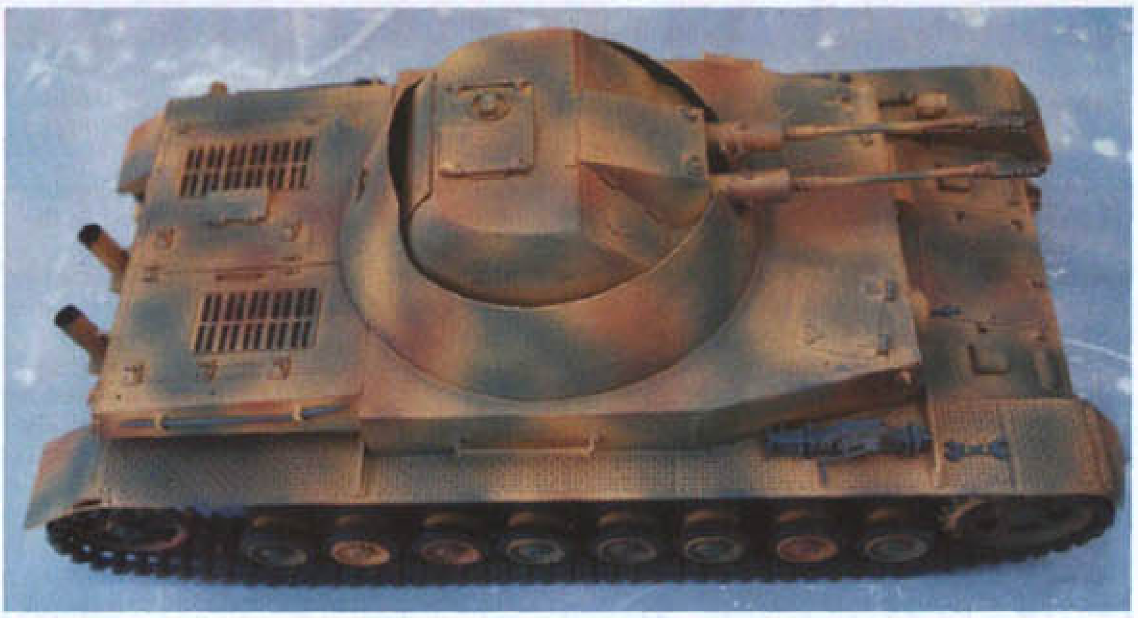
Later batches of the early type have the standard driver's hatch and commander's cupola and standard skirts, but still have a gap under the *Kobra* box. The 'late' T-80B has a redesigned turret. The frontal armour is thicker and more vertical, with wider 'cheeks'.

A major difference is on the back of the turret, which is more oblique and square, behind and on the side of the gunner's and commander's cupola. Also, the later version has a basket in the 8 o'clock position on the gunner's side, which is common to the T-80Y/U/UD series.

The 'final' production T-80B turret is the same as the 'late' one, but has reinforced rear armour. Also, on the turret of 'final' and 'late' models the *Kobra* box has no gap under it and the hull front is thicker (not the 30mm appliqué armour) on the driver's side, with two protuberances on the left and right. The same appear on T-80Y and U/UD.

The only problem that I have found is that all T-80B sub types have the same engine deck and exhausts, so it's difficult to see which has the SM-1000 GTD-1000/T/TF engine. Maybe it's an internal change and the engine deck is left the same and common to all?
Andreas Marketos
Kefalonia, Greece





Big Kugelblitz

Dear Ken
I thought I would send you a couple of photos of the latest model Its a 1:15 scale *Kugelblitz* based as always on a Bandai model It's a bit 'factory finish' because I will be sending it off to a customer in the United States and he wants to finish it himself.
Cheers.
Dave Toothill
email

Thanks Mil Mod!

Dear Ken,
Can I take the opportunity to thank you for including my 'Cry for Help' reference spare copy instructions? I have to say that members of the modelling community have generously succeeded where Airfix could not. I have now received copies of instructions from a number of kind modellers (including one from Canada) and I would be most grateful if you could also include my_thank you note when convenient.
Thanks and kind regards.
Clive Beacham
email

Wirly Birds

Dear Sir
What a pleasant surprise to see a 'wirly bird' - a helio, a chopper, or whatever you like to call them, in the last issue of good old *Mil Mod* - non too soon for me. (*MM* Vol.36 No.4) And, it was a British helicopter, despite us buying American gunships, which made it all the better.

Lester Plaskitt's build of the 1:35 scale Accurate Armour Lynx was excellent. An expensive model, but when built up it's awesome. You can obviously tell that I'm a fan of rotary wing models, I usually paint 1:35-1:32 scale figures, in conjuction with the few helicopter kits in this scale and the odd fixed wing type. I am not too fond of AFVs, I like soft skins better, but I can give helicopter models house room anytime.

I hope you will give the same treatment to the Trumpeter 1:35 scale Chinook - not the first kit (Vietnam version), but the next CH 47D variant that can be adapted for those 'Big Wokkas' operated by the Royal Air Force.
John Roberts
email
John, I think you will see more battlefield helicopter models here in the future. Ed

Vickers 'K' Gun PLM

Dear Sir,
I have seen a picture described in a book as a Vickers 'K' gun on PLM mount. It is on a British Daimler armoured car and looks to be remote controlled. I know that the Vickers 'K' gun was used by the SAS on their jeeps, but what is a PLM mounting? What does PLM stand for?
Chris Browne
email
Ah this one's come up again! The British PLM mounting was, indeed, a remote control machine gun mounting for Vickers 'K' (GO) and Bren Light machine guns on AFV turrets. Its full description is, Parrish Lulworth Motley Mounting. British nomenclature at its best. Ed.

Contacta
PROFESSIONAL
HUMBROL
LIQUID
POLY
28ml
Surpass
ACETONE
HOUSEHOLD SOLVENT
50ml e

Polystyrene cements (left to right), semi-liquid from Revell, liquid, acetone and my acetone/liquid dissolved sprue.

Glues & Adhesives

Peter Gillson offers some practical advice for beginners

There are a wide variety of adhesives on the market under all sorts of brand names, but generally, adhesives used in modelling can be put into one of three categories, based on how they work.

The first category is 'cements', which provide a join by dissolving the edges of the parts being joined so that a single welded join is formed. The second method is a 'mechanical' join where the adhesive forms the filling in a 'sandwich' of the parts being joined, the join is based on each part being fixed to the adhesive, in effect there are two joins, part 'A' to the adhesive and part 'B' to the adhesive.

The final category is cyanoacrylate - super glue-, this forms a join by bonding together the moisture molecules in the parts being joined.

Health and safety

Before continuing, a short health warning! Remember that these adhesives are based on chemical compounds and as such can be hazardous to health and so care should be taken to avoid breathing in the fumes. Always read the labels because many will have specific warnings.

Cements

1. Polystyrene Cement

This is a mixture made of the plastic dissolved in acetone, chlorobenzene, or trichloroethane, and is the most commonly used of adhesives in plastic modelling and the basis for most plastic modellers. There are three main types:

Tube: most people's first introduction to polystyrene cement, this is a very thick solution and tends to be stringy. One danger with it is that it will continue to melt the plastic it is on for some time after application and if used too heavily it can distort small parts or the entire model.

Semi liquid: still a mixture of solvent and plastic, but a lot thinner. The only supplier I know of is Revell and it comes in a bottle with hollow metal 'needle' for application. It is much easier to use than tube cement and had more 'body' than the true liquid cement.

Liquid: this is really the solvent without any plastic dissolved in it. It has the great advantage that it will flow along a joint by capillary action. I discard the brush fitted to the jars from some manufacturers and use an old paintbrush to apply the liquid.

Acetone: one of the solvents used in the manufacture of polystyrene cement is available from chemists and can be used in place of the liquid cement, but it does have a very strong odour. I use acetone only with liquid cement (50:50) for making liquid sprue. This cement can only be used to glue polystyrene to polystyrene. It will dissolve expanded polystyrene.

2. ABS Cement

ABS (Acrylbutyl styrene) cement based on a solution of dichloromethane and has the ability to bond different types of plastics such as ABS, polystyrene and acrylic (perspex - Plexiglas in the US) I know of two manufacturers, Plastic Weld is the brand name for the cement produced by Plasconstruct and Plastic Magic, which is produced by Deluxe Materials. This cement is very thin and when applied by an old paintbrush it will flow easily along the area to be joined, or even by capillary action into the join. I often apply a little along the join, press the pieces together and then allow a further amount to flow into the join off the brush.

Mechanical

3. Balsa Cement

Balsa cement is miss-named because it is not a cement, but a mechanical glue designed for gluing balsa wood. It should always be applied to both surfaces being joined. If gluing end-grain it is worth 'double gluing', where the glue is applied to the end grain, left to soak in and dry and then more glue is added and the pieces put together.

4. Polyvinyl Acetate

Polyvinyl Acetate (PVA or white glue) is a general wood working glue, and a glue available for children's use. I use it mostly for construction of bases and when diluted with water, for applying static grass, cat litter, etc., to bases.

5. Aliphatic Resin

The yellow wood glue used by professional carpenters, dries faster than PVA and at lower temperatures, but realistically not worth the additional cost for modellers.

6. Epoxy glues

An extremely strong two-part adhesive, which will form a bond as strong as any of the other adhesives. These glues are easily available with a curing time ranging from 15 minutes to 24 hours. The join is solid and, therefore, should not be used to join flexible materials, however, it does fill gaps. The most well know make in the UK is Araldite but there are other manufacturers.

7. Rubber based

There are two types: those based on a water solution and those based on a spirit solution. The former tend to be white and flow readily (i.e. Copydex), while the latter are more solid and flammable (as the smell will tell you!), a common brand being Thixofix. These glues are contact adhesives so a layer is put on both surfaces, left for a period of time and then the parts are put together. Often it will take up to 24 hours for the bond to be complete because it strengthens as the solvent evaporates. I have only ever used either of these when making bases.

8. Scattergrip

A product by Deluxe Materials for railway modellers, it is very much like PVA in the type of uses and the way it is used, but remains a little tacky. It is designed to fix scenic base material and has the advantage over using PVA in that it dries faster.

9. Cyanoacrylate

Various manufacturers produce a number of types with differing viscosity and curing speeds, but broadly there are two types, liquid and gel, available. I have found that the commonly known types, which are generally available in hardware shops, etc., are medium viscosity.

Liquid: available in three types with differing viscosity, thin, medium and thick.

Thin: There needs to be a good fit on parts because it had very limited gap filling properties. The glue can be applied directly to the parts before joining them, or parts can be held together lightly and the glue applied on the outside of the joint, allowing capillary action to draw the glue into the joint. I have never mastered this latter technique. The bond is made in a couple of seconds, too much glue and the bonding is delayed.

If all you have is the thin glue and the parts are not a good fit, ordinary talcum powder can be mixed with the glue to thicken it. I do this by either adding talcum to a pool of the glue before applying it.

Medium and thick: Use this as you would most glues. Apply a small quantity to one side of the joint, align parts and give a gentle squeeze. In three or four seconds you can release the pressure. If too much glue is used, it will take a little longer to harden and it might ooze out, gluing your fingers to the work. - this is the voice of experience!

Gel: it takes a little longer to harden than the thick and gap filling.

Accelerator: when sprayed on the glue, it will harden the joint immediately regardless of the amount of cyanoacrylate applied.

One general point about cyanoacrylate is that it does not bond to itself so any dried glue must be removed from the pieces being joined before applying the glue.

It can also be applied to balsa wood to strengthen it.

Non bonding uses for adhesives

For glass lenses in vehicle lights I use Glass Glue - This product is marketed by B&Q stores although I am sure other manufacturers produce a similar product. It has been designed to glue glass together, but I use it to make the glass in the lights of vehicles, a small drop in the lamp holder produces a realistic lens.

Strengthening balsa wood

Cyanoacrylate can be applied to balsa wood to strengthen it.

SCATTER -GRIP
PLASTIC WELD
PLASTIC MAGIC
Clear
GLASS GLUE
SETS FAST IN SUNLIGHT

Clock wise, Scatter grip, Plastic Weld, Plastic magic, and glass glue.

Walls of buildings for dioramas

Polystyrene Cement will dissolve expanded polystyrene and so broken walls can be made by constructing the wall from the expanded polystyrene, when spreading the glue to the top. The adhesive will then dissolve the polystyrene; the amount being dissolved will depend on the amount of adhesive applied.

Gap filling

Liquid sprue: a mixture of liquid polystyrene cement (or acetone) into which small pieces sprue are dissolved.

Cyanoacrylate mixed with talcum powder becomes a thicker paste, which will bond and fill gaps at the same time.

Texturing plastic

Apply a coat of liquid cement onto the plastic to soften the surface and then a texture can be added by using an old bristle paint brush in a stippling action.

Choice of adhesive

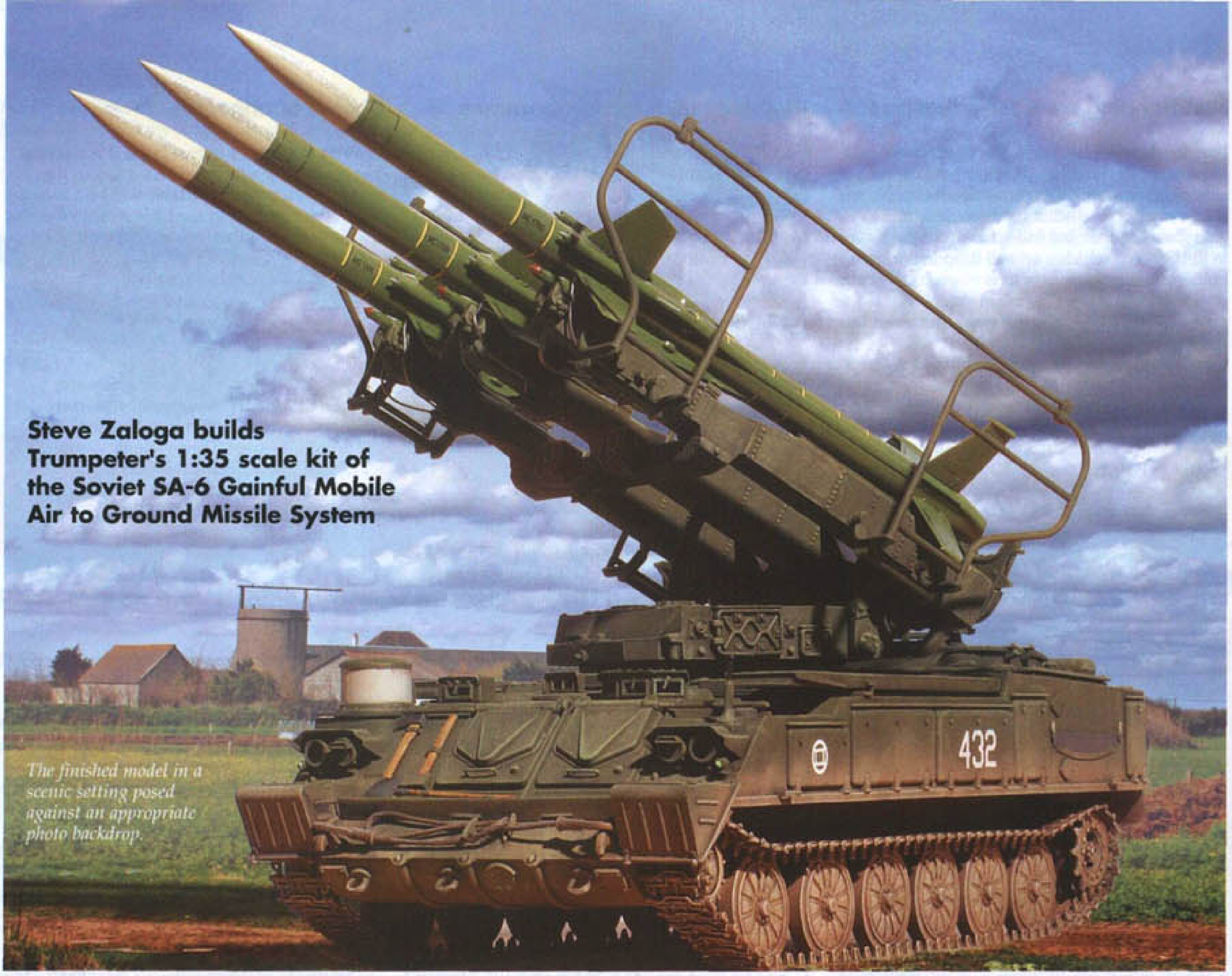
In order to ensure a secure bond it is essential that the correct adhesive is used to join the materials. Hopefully the table will be a useful guide, the numbers in the table refer to the numbers of the adhesives used above.

Suppliers

Expo Tools, Unit 1 Barn Hill Farm,
The Ridgeway, Lamphey, Pembroke
SA71 5PB www.expotools.com
W Hobby Limited, Knights Hill Square,
London SE27 0HH. www.hobby.uk.com
Historex Agents, Wellington House,
157 Snargate Street, Dover, Kent
CT17 9BZ www.historex-agents.co.uk
Optum Hobby Aids, PO Box 262, Haywards
Heath, West Sussex RH16 3FR.
Tel: 01444 416795. ■

	Resin	Polystyrene	Polythene	Metal - etched brass etc	Metal - white metal kits	Polystyrene foam	Paper / card	Acrylic (Perspex)	ABS	Balsa wood	Other wood	Static grass	Other base materials, stones twigs etc	Pollyfiller (as ground work)
Pollyfiller (as ground work)	6,9	6, 9	9		6			6		4, 6	4, 6	4, 8	8	
Static grass						4, 8	4, 8	4, 8	4, 8	4, 8	4, 8		4, 8	
Other base materials, stones twigs etc	9	6, 9	9	9	9		4,9	6, 9	6, 9	4, 9	4, 9	4, 8		
Other wood	9	6, 9	9	9	6, 9	4, 7	9	6, 9	6, 9	9	9			
Balsa wood	6, 9	6	9	9	6, 9	4, 7	9	6, 9	6, 9	3, 9				
ABS	9	2, 6, 9	9	9	6	4	9	2, 6	2, 6					
Acrylic (Perspex)	9	2			6	4	9	2, 6						
Paper / card	9	6, 9	9		6, 9	4	4							
Polystyrene foam	6	4			6	4, 7								
Metal - white metal kits	6, 9	6, 9		9	6, 9									
Metal - etched brass etc	9	6, 9	9	9										
Polythene	9	9	9											
Polystyrene	6, 9	1, 2, 6, 9												
Resin	6, 9													

Diagram showing what glues and adhesives are compatible to materials used by modellers. The numbers refer to those in the text against the particular types of glue and adhesive.



Steve Zaloga builds Trumpeter's 1:35 scale kit of the Soviet SA-6 Gainful Mobile Air to Ground Missile System

The finished model in a scenic setting posed against an appropriate photo backdrop.

'Red Sam Six'

Air defence missile vehicles are scarce among modern armour kits, so I was pleased to see Trumpeter announce a 1:35 scale kit of the Soviet SA-6 *Gainful*. Overall the kit is very nice at an affordable price, though it is let down by a mediocre representation of the missiles.

Technical Background

In 1958, the Soviet Army began the development of a self-propelled air defence missile system to defend their tank and motor rifle divisions under the code name 2K12 *Kub* (Cube). The programme was headed by Special Design Bureau 15 (OKB-15) under V.V. Tikhomirov. The transporter-erector-launcher (TEL) vehicle was developed by Astrov's OKB-40, now part of Metrovagonmash in Mytishchi near Moscow.

The GM-578 was a derivative of a family of light armoured vehicle developed at this time, another of its relatives being the GM-575 chassis used with the ZSU-23-4 *Shilka*. The GM-578 was combined with the 9P12 three-rail launcher array at the Ulyanovsk Mechanical Plant to create the 2P25 TEL. The 2K12 *Kub* system was accepted for Soviet army service in 1967 and included the 2P25 TEL, the 3M9 missile, the 1S91 radar fire control vehicle, and a number of other support vehicles. Western intelligence dubbed the *Kub* system as the SA-6 *Gainful*.

The baseline 2P25 TEL was short-lived and supplanted by the 2P25M1 which had a simplified front glacis plate instead of the curved, forged plate on the initial vehicle. The 2P25M1 manufactured after 1969 had the improved V-6R1 engine instead of the original V-6R as well as many internal electronic improvements associated with missile system upgrades. The 2P25M1 was followed by the 2P25M2, but the changes in this case were mainly internal and connected with the upgrades in the *Kub*-M1 and *Kub*-M3 systems.

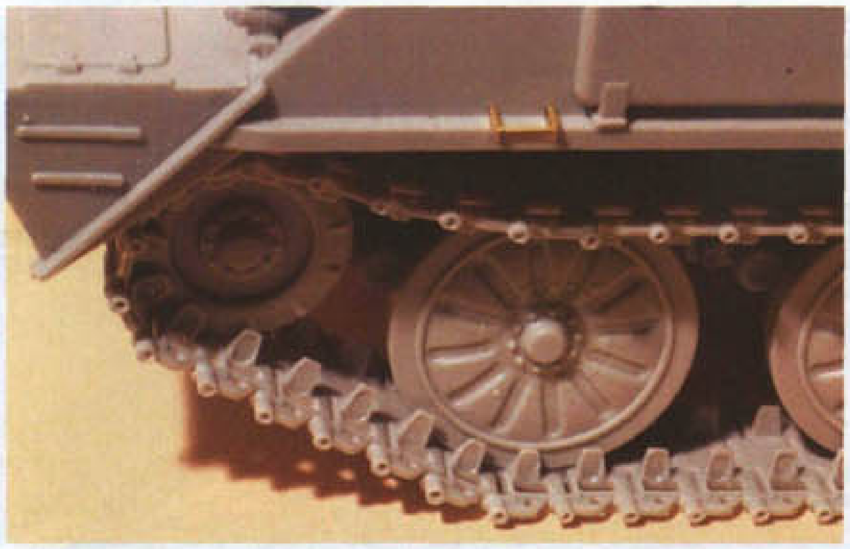
The kit represents the common 2P25M1 or 2P25M2 version, where the vehicle, like the missile, underwent continual changes. The initial 3M9 missile had exposed interferometer antenna on the rear fins and a heavy cuff at the base of the fins. The kit missiles are the later 3M9M3, which lack the external antenna and have the simplified rear fins. The export version of the *Kub* system was designated as *Kvadrat* (Quadrant) and followed the same evolutionary pattern as *Kvadrant*-M1, etc. The associated components received an 'E' suffix, such as 2P25M1E.

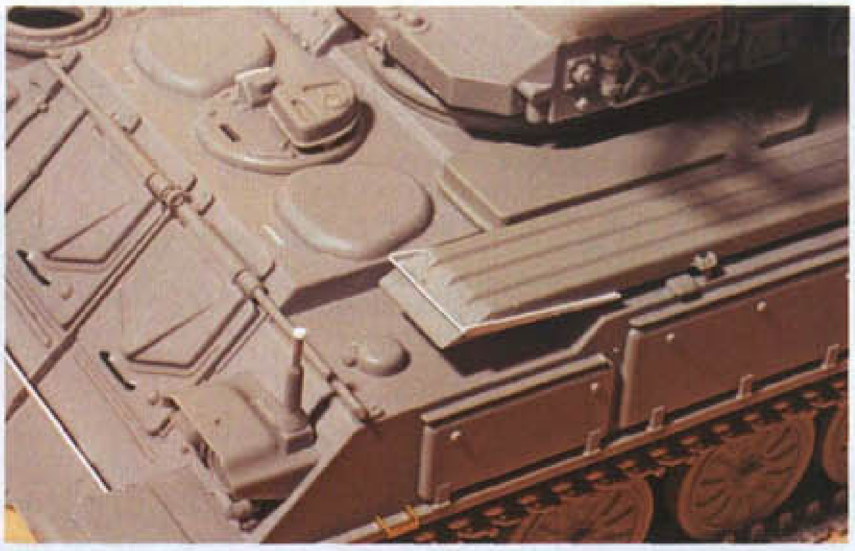
Trumpeter's Kit

The Trumpeter kit is moulded in light grey plastic with a minimum of flash and is extremely nicely moulded with a good level of detail. Missile vehicles such as these tend to have a lot of small fittings and many of these are simplified on the kit. This is one of those kits that offer almost unlimited opportunities for super-detail fans to go wild by adding many small details such as latches, hinge detail, and small fittings. On the other hand, the kit is very well-detailed and assembles into a very attractive model straight out-of-the box.

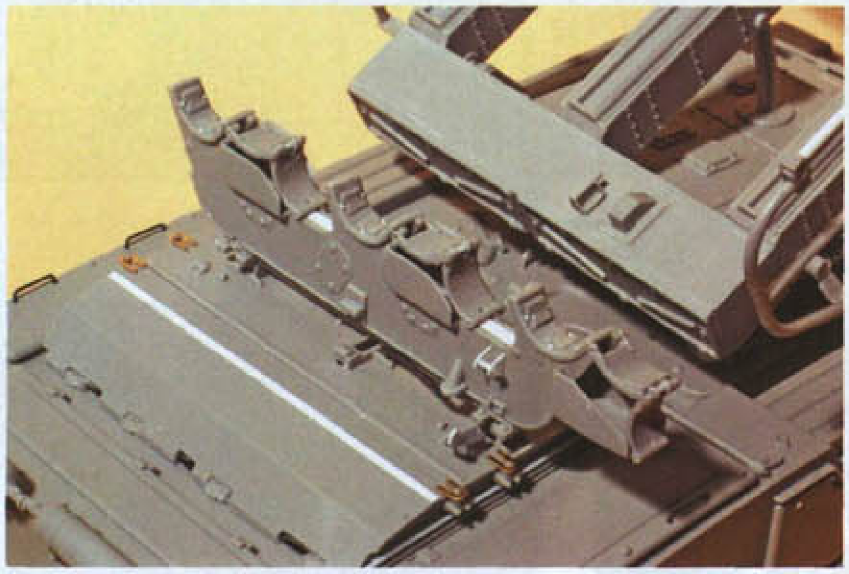
I am not aware of any accurate scale plans of the 2P25 so any precise evaluation of the accuracy of the model is conjectural. The overall dimensions are 'on the money'. There have been some complaints about dimensional problems on some of the armour websites, such as Missing Lynx, based on photos, but I am very dubious of the idea of making dimensional judgments based on photos due to the distortions induced by camera lenses. Perhaps one of the Russian hobby magazines will provide some measured drawings in the future to more conclusively settle this controversy.

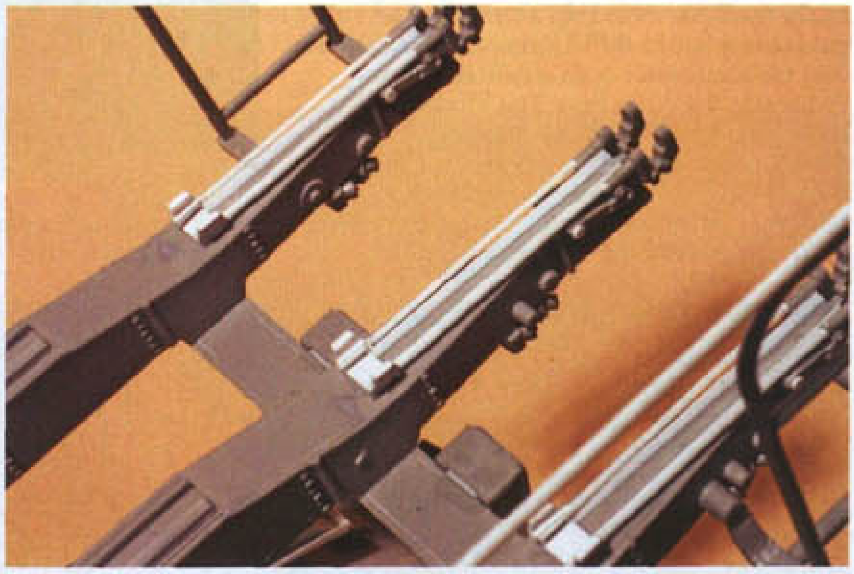
There are the usual sorts of simplifications found in most kits of modern AFVs due to the sheer complexity of these vehicles, and some parts are a little thick, especially those representing stamped steel metal parts. So, for example, the folding transport rest assembly on the rear deck is chunky on many of its small assemblies, and it lacks some small components such as the rear lock. The rain gutters on the upper hull vent covers are thick. The various periscopes in the front are moulded solid along with the windshield





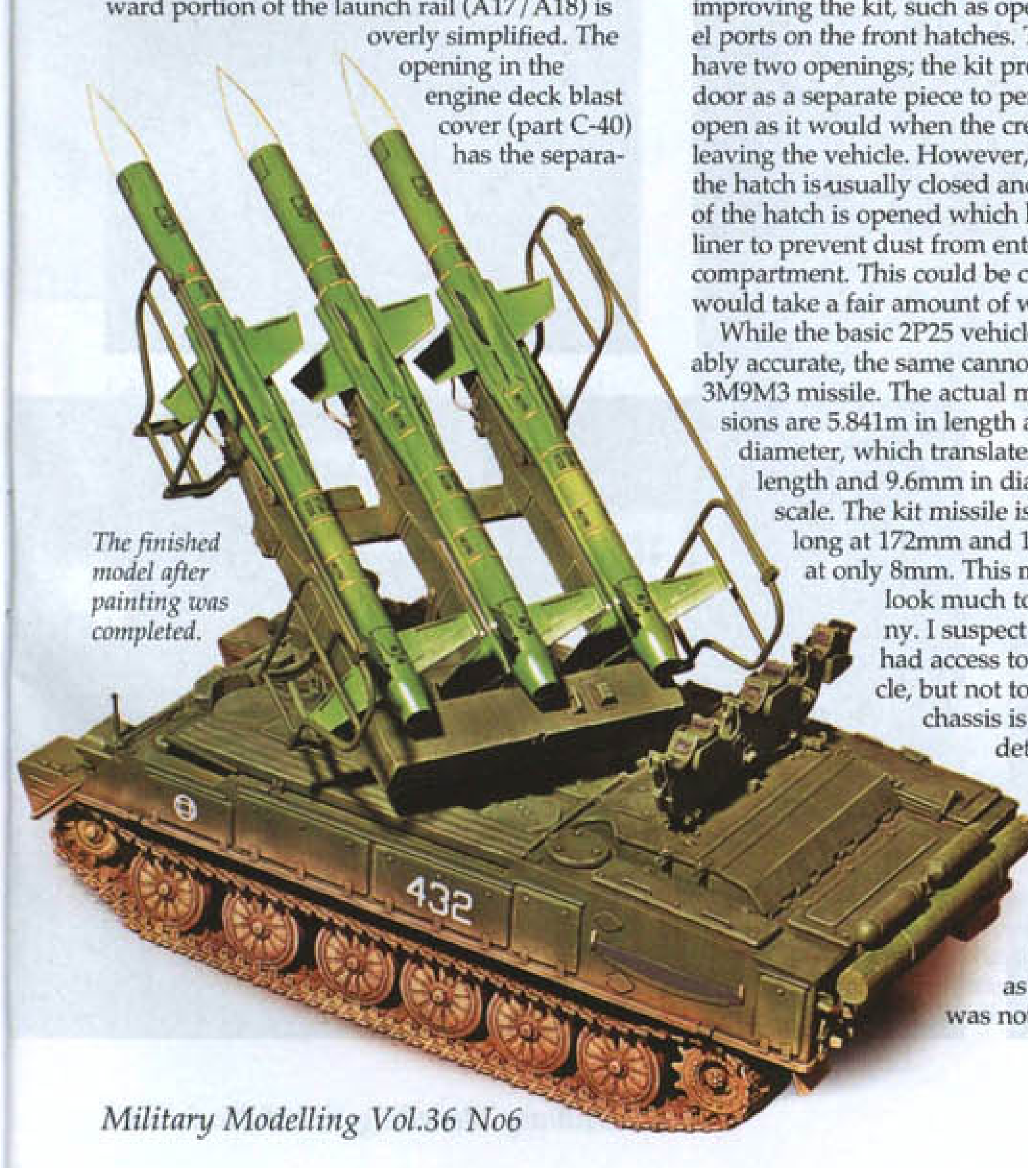
ABOVE LEFT: The kit tracks are nice, but they can be improved by hollowing the guide horns using a power tool and a small cutting bit. ABOVE RIGHT: Rain gutters around the front of the air intake covers were added using sheet plastic. BELOW LEFT: The rear travel lock assembly can be improved by thinning the thicker bits. The blast cover has the separation strip too far forward and this can be replaced. BELOW RIGHT: Front sections of the missile launch rails are simplified on the kit and can be improved with a bit of detail work.





wipers. In spite of these simplifications, I found the assembly to be excellent with very few fit problems.

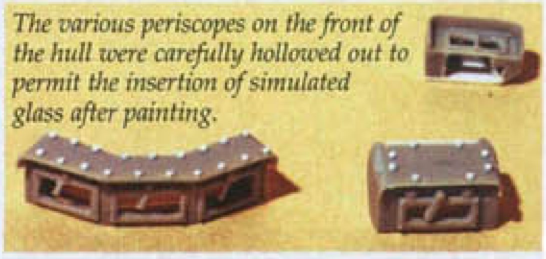
Aside from the inevitable simplifications, I did find a number of goofs in the kit, but they are mostly minor. The depiction of the forward portion of the launch rail (A17/A18) is overly simplified. The opening in the engine deck blast cover (part C-40) has the separation point too far forward, but this probably only matters to modellers planning to open up the cover to show the vehicle in travel mode. The blast cover is opened during travel since it covers the engine's radiator opening.



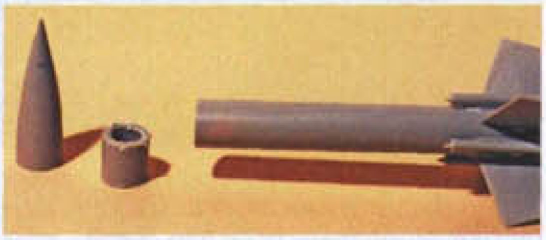
The finished model after painting was completed.

There are several other opportunities for improving the kit, such as opening up the travel ports on the front hatches. These hatches have two openings; the kit provides the entire door as a separate piece to permit it to be left open as it would when the crew is entering or leaving the vehicle. However, during travel, the hatch is usually closed and the centre part of the hatch is opened which has a transparent liner to prevent dust from entering the driving compartment. This could be cut open but it would take a fair amount of work.

While the basic 2P25 vehicle seems reasonably accurate, the same cannot be said for the 3M9M3 missile. The actual missile dimensions are 5.841m in length and 0.336m in diameter, which translates to 167mm in length and 9.6mm in diameter in 1:35 scale. The kit missile is about 3% too long at 172mm and 17% too narrow at only 8mm. This makes the missile look much too long and skinny. I suspect that Trumpeter had access to a launcher vehicle, but not to a missile as the chassis is much better detailed than the missile right down to under-pan detail, whereas the missile lacks any surface detail such as access panels. I was not interested in scratch-building three new missiles, so I opted for a cosmetic change of shortening the length, which at least makes the missiles look marginally better.



The various periscopes on the front of the hull were carefully hollowed out to permit the insertion of simulated glass after painting.



The missiles are too long and thin, but by cutting out a small section from the front, their appearance can be improved, even if they remain inaccurate in diameter.

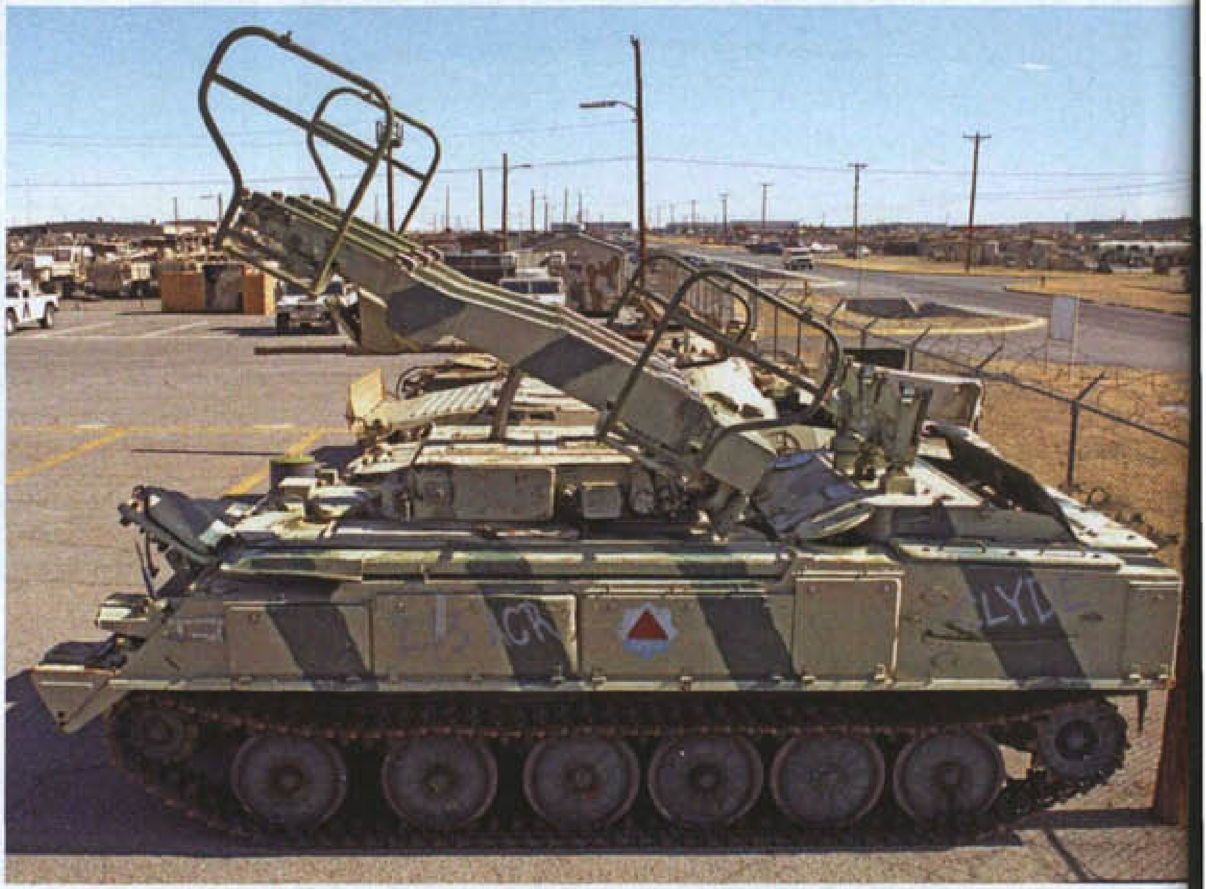
Kit Assembly

I found no particular difficulties in assembling the kit, and the parts fit was generally quite good. I made a number of small detail improvements on the launcher assembly, but I actually spent more time cleaning up joints than on the detail work. For modellers wishing to do a super-detail project with this kit, the Wings & Wheels Publication (WWP No. 15) entitled 'SA-6 Gainful in Detail' from the Czech Republic is an excellent source of photos - especially for modellers!

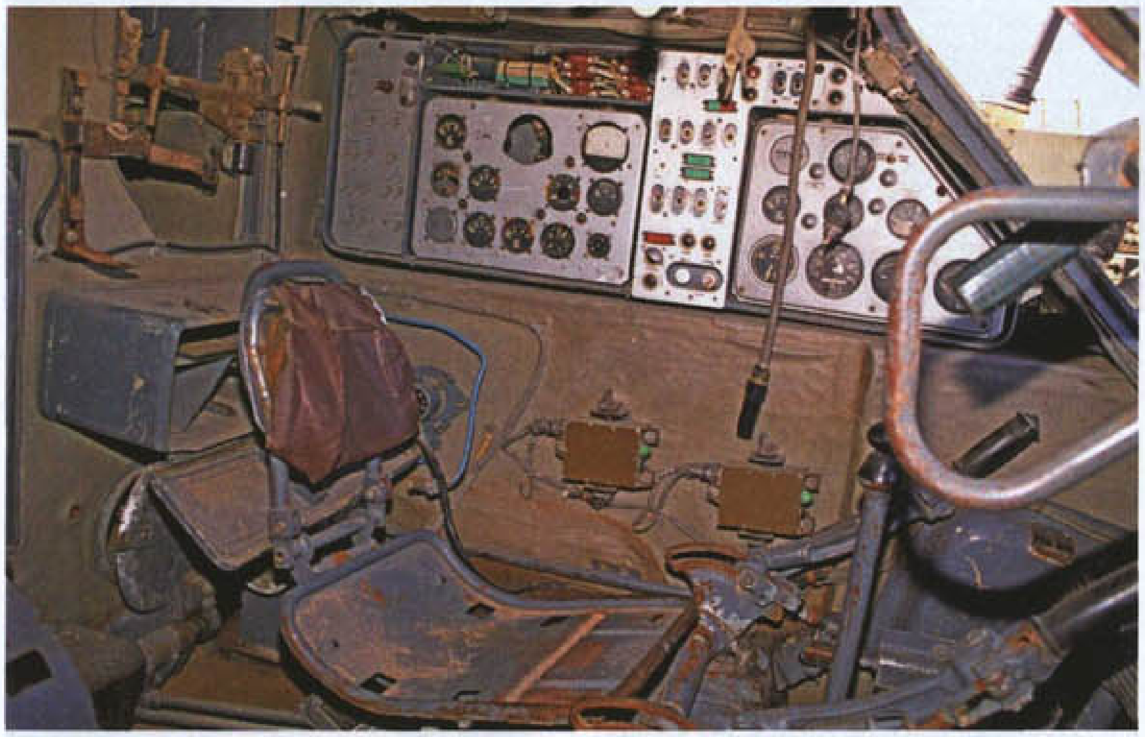
I rebuilt the area around the front of the launch rails, and I also did a fair amount of thinning and rebuilding on the rear travel lock assembly that sits on the engine deck. I added rain gutters around the front edge of the air intake covers on the hull roof. The front periscopes are moulded solid, and I hollowed them out from behind in order to include simulated glass behind them on the finished model.

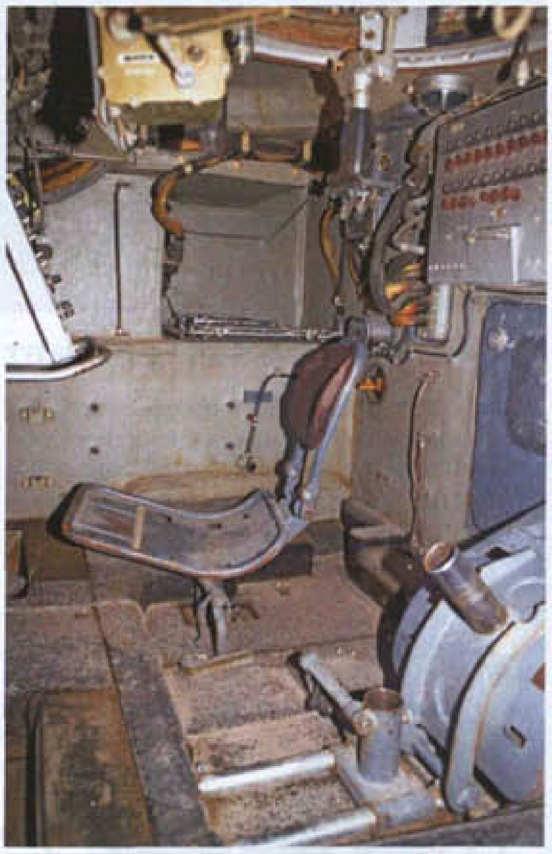
The kit track is link-and-length and is nicely detailed. Model Kasten has a set of after-market tracks and wheels to upgrade the DML *Shilka* kit, but it costs more than the Trumpeter kit and is a somewhat dubious improvement. Although the Model Kasten tracks have some guide horn detail that the Trumpeter kit lacks, the tracks are a bit thick due to their working feature and the Trumpeter tracks are more delicate in this respect.

There are, in fact, several casting variations on these tracks, including a simple style guide horn with a thin 'U' shaped trim, and a very elaborate style with a delicate 'U' nestled inside the outer trim. The Model Kasten track attempts the more elaborate style, but doesn't really carry it off. I replicated the simpler style by using a burr in my Dremel Mini-mite to carve in a little depression into the links after the tracks were assembled.

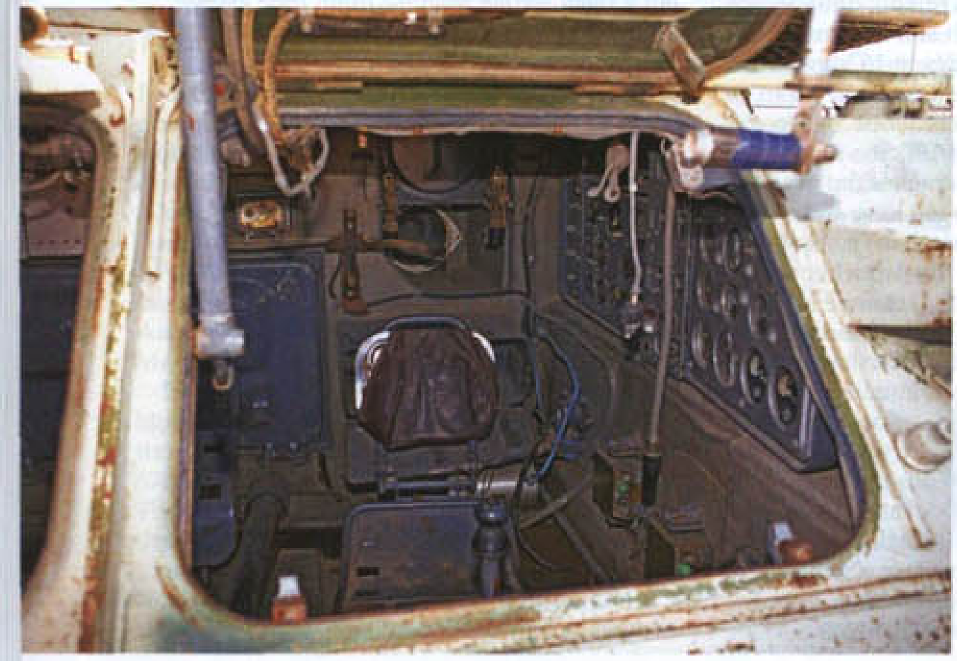


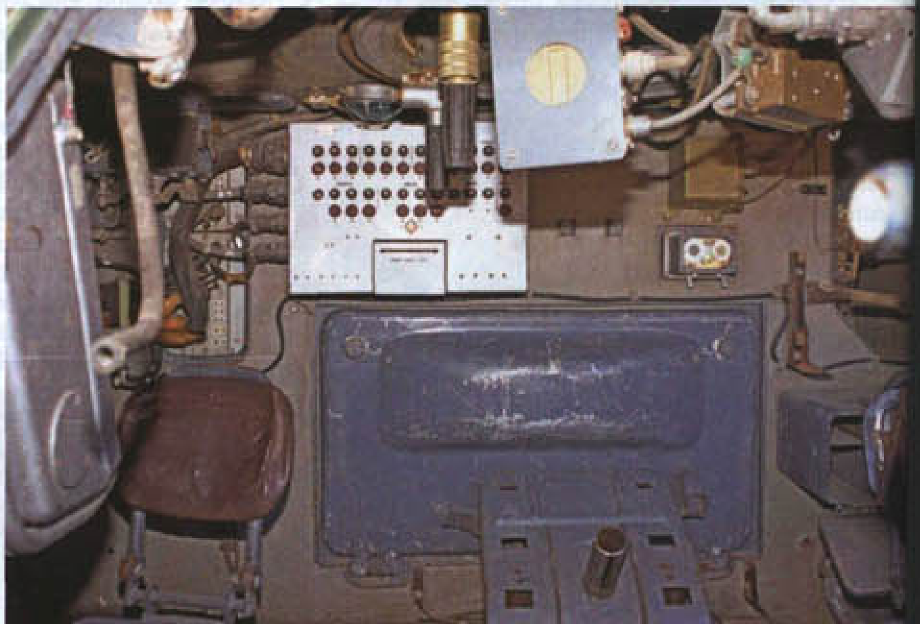
This 2P25M2 was captured from the Iraqis in Operation Desert Storm in 1991 by the US 3rd Armored Cavalry Regiment.

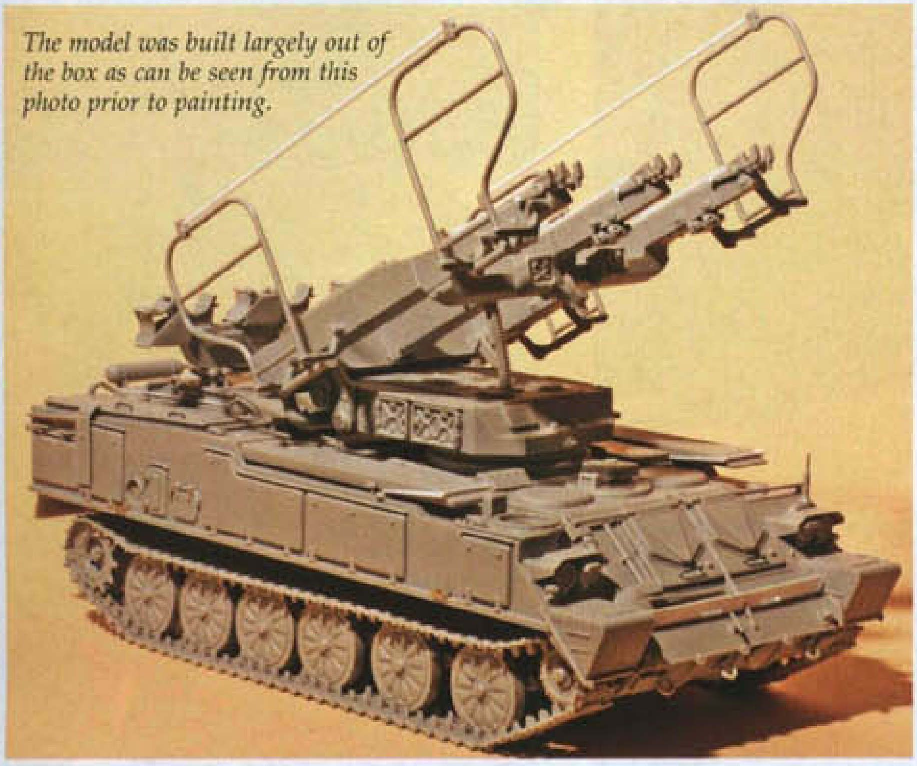




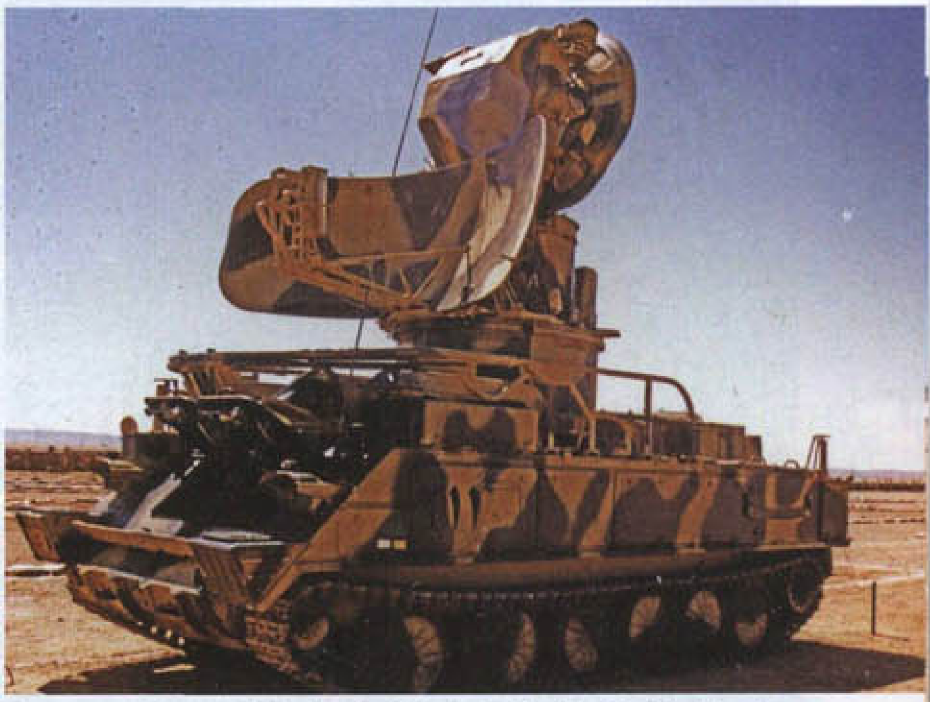
ABOVE: The driver's compartment showing the driver's seat and controls. RIGHT: A view inside the front compartment showing the vehicle commander's station on the right side of the hull. BELOW LEFT: View inside the driver's compartment on the Iraqi 2P25M2. BELOW RIGHT: This is the interior of the driver's compartment showing the bulkhead between the crew compartment and the missile launcher behind.



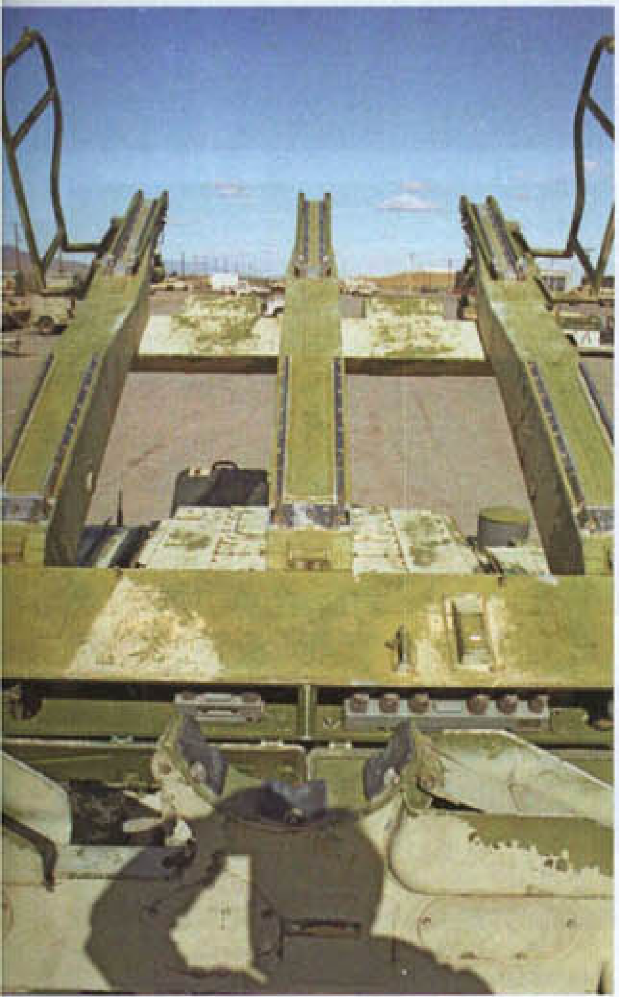


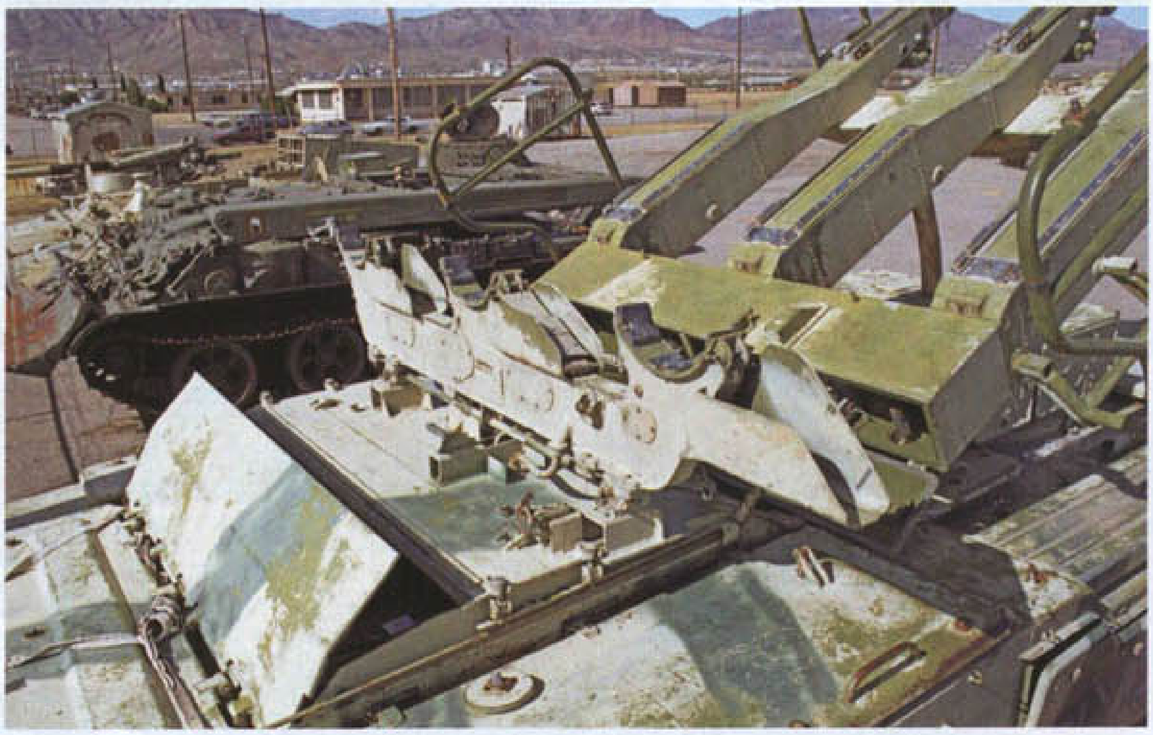


The model was built largely out of the box as can be seen from this photo prior to painting.

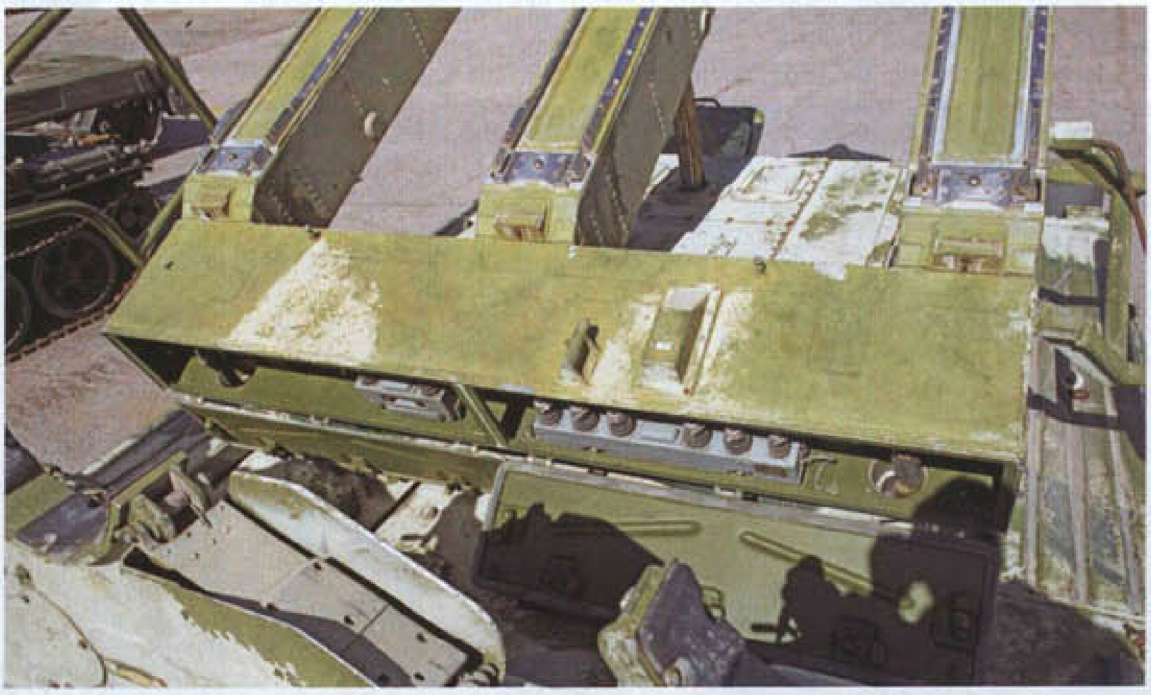


Once conversion possibility for the kit is the 1S91 (Straight Flush) radar fire control vehicle like this Egyptian example. (Photo: Lon Nordeen)





LEFT: View over the launch rails of the 9P12 launcher array. ABOVE: When the vehicle is in launch mode the aft door covering the radiator opening would be closed as on the kit. BELOW: The rear of the launch rails. The rear access doors are open in this view.

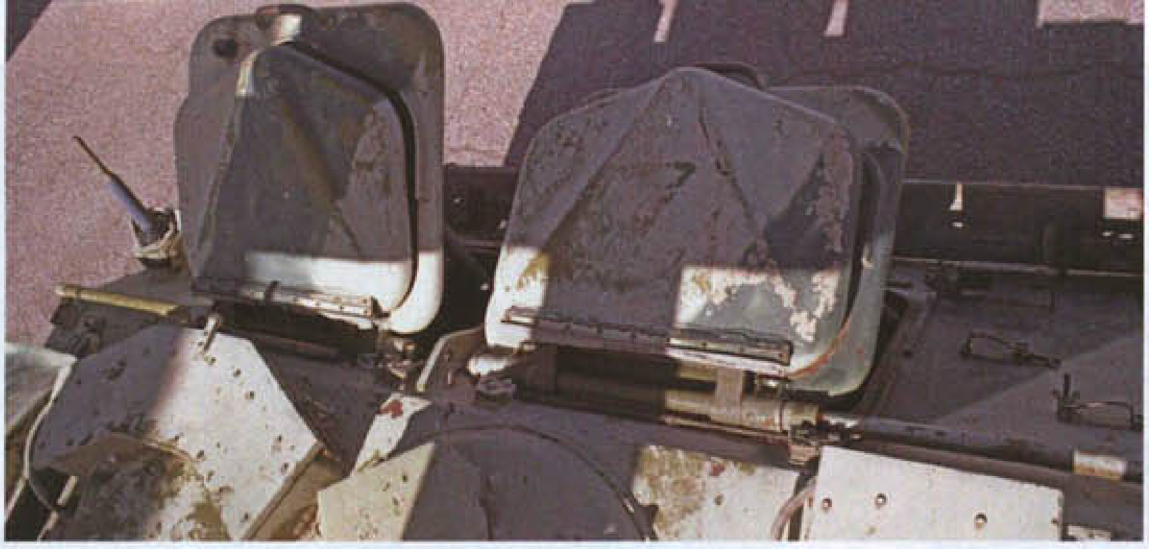


Painting the Model

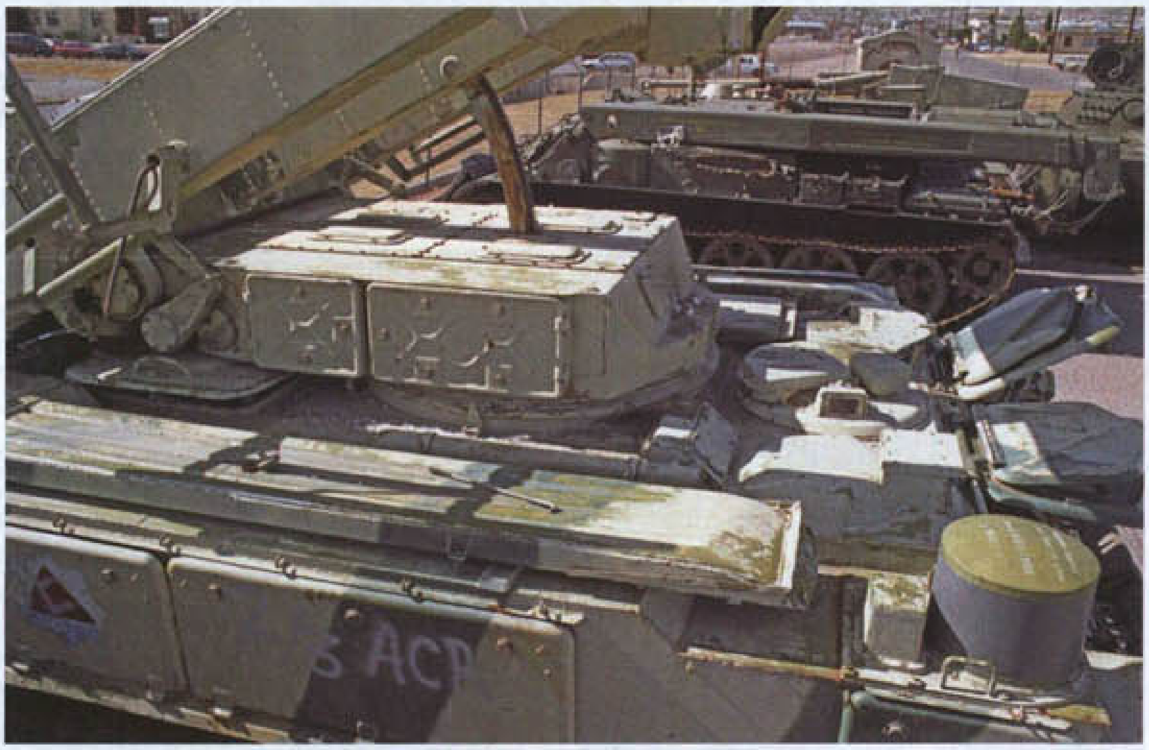
I decided to finish my model as a standard Soviet Army vehicle. The SA-6 has been widely used in combat in the Mid-East wars, so there are some more colourful options than this. Also, in recent years the former Warsaw Pact countries have been camouflage painting their vehicles, which offers another colourful option. Ironically, I find Tamiya NATO Green XF67 to be a good representation of Soviet dark olive green, and that was the colour I used on this model. Aside from the base colour, the vertical surfaces of the data-link antenna (part C54) should be painted in a pale tan or grey colour as this is dielectric material and not painted in the usual camouflage colours.

The kit decal sheet is fairly sparse and covers a couple of post-1991 ex-Warsaw Pact vehicles. It lacks any of the warning stencils such as those on the data-link antenna (part C54). I used some dry transfers for the hull number and tactical insignia.

While, the decal sheet is adequate for the TEL, there are no markings at all for the missile. The missile should have a large amount of stencilling near the access ports, and also the usual stripes which show how the missile lines up when carried on the transloader and on the TEL launch rails. I made my own decals by creating the basic labelling in Photoshop, and then printing them on to some clear decal sheet using a laser printer. I

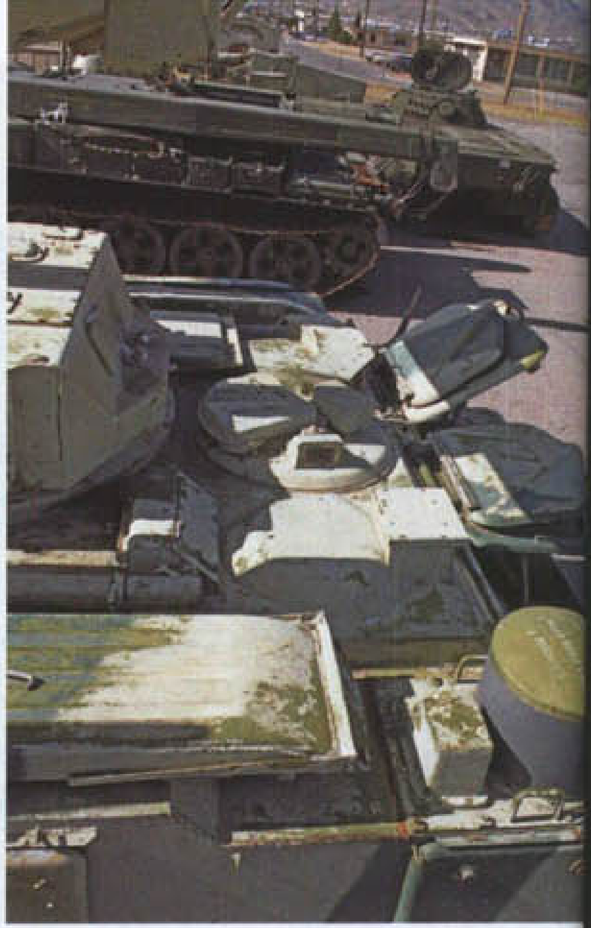


ABOVE: Front hatches in their open positions. BELOW: The vehicle's roof showing the 9P12 launcher array.

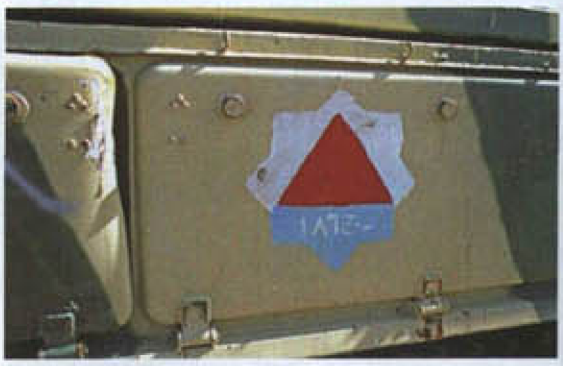


then added the yellow stripes with Woodland Scenic model railroad dry transfer stripes, and sealed the decals before applying them using some clear gloss fixative. To prevent silvering, I sprayed the painted missiles in clear gloss before applying the decals. The missiles are supposed to be painted in a matt olive green, but in practice the missiles I have seen have a semi-gloss finish.

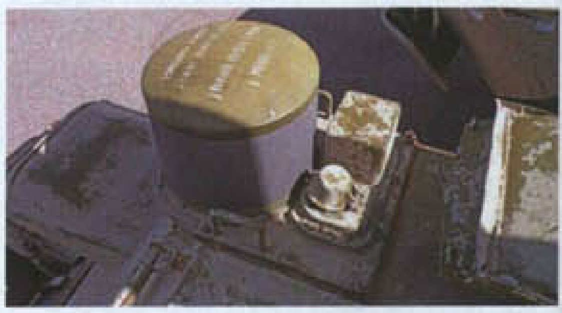
The 3M9M3 missiles come in various colour combinations depending on the customer. The Soviet and Warsaw Pact war-loads were finished in the usual Soviet dark green with the dielectric radome in medium grey or light tan. There is also a tropicalized version of the paint scheme used on 3M9M1 and 3M9M3 missiles exported to countries in the Middle East such as Iraq and Egypt. These missiles are finished in overall semi-gloss white with light tan radomes. The temperate paint scheme had stencilling on older 3M9 and 3M9M1 missiles in white, while on newer 3M9M1 and 3M9M3 missiles the access panel markings are black and the warning markings and location stripes are yellow. On the tropicalized missiles, all the markings are in black. Many photos show these missiles in bright colours such as red or blue nosecones. However, these are not war-loads, but rather are training missiles or parade dummies. ■



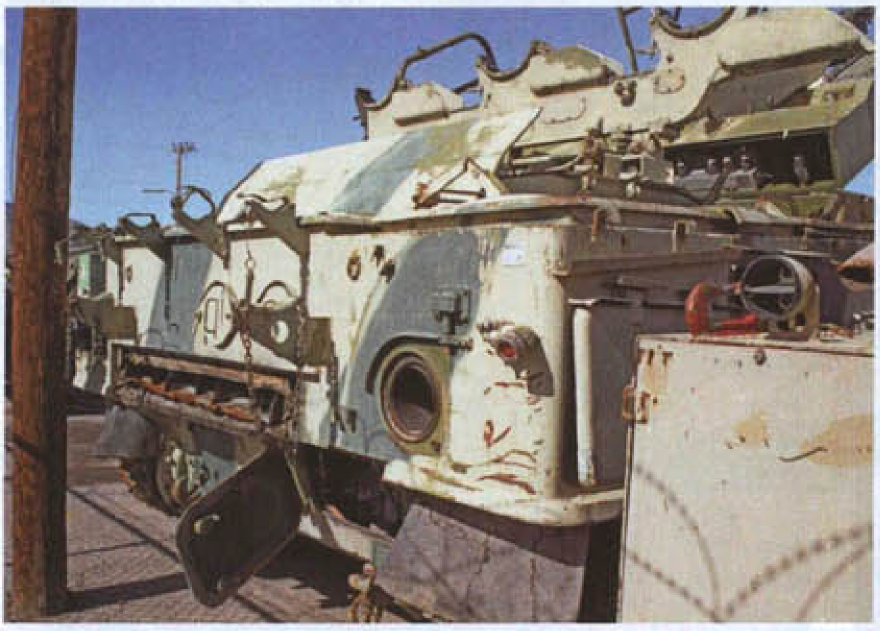
Overhead view shows the detail on top of the driver's compartment.

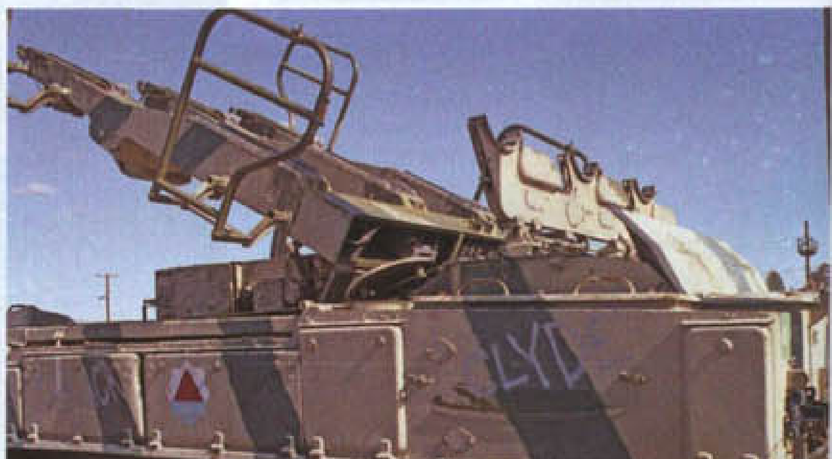


Tactical marking on the side of an Iraqi 2P25M2.

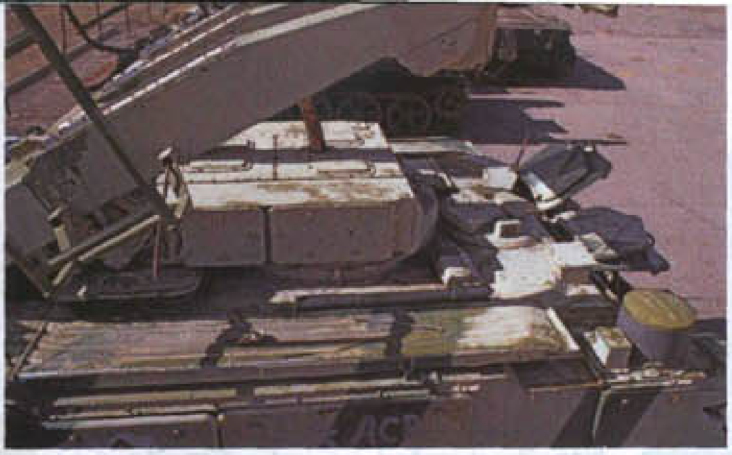


A view of the data link antenna that connects the 9P25 launch vehicle to the 1S91 radar fire control vehicle.

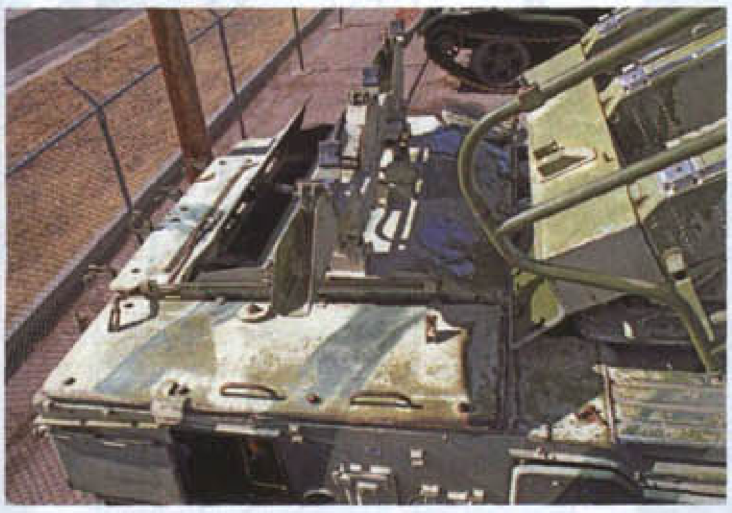




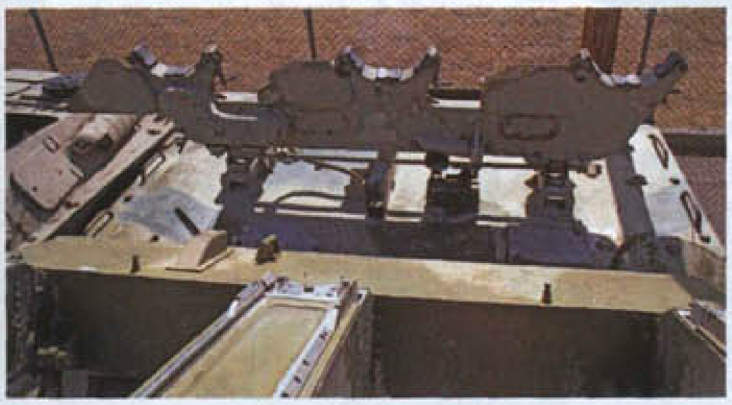
ABOVE LEFT: Hull rear plate. RIGHT: Rear side view of an Iraqi 2P25M2.



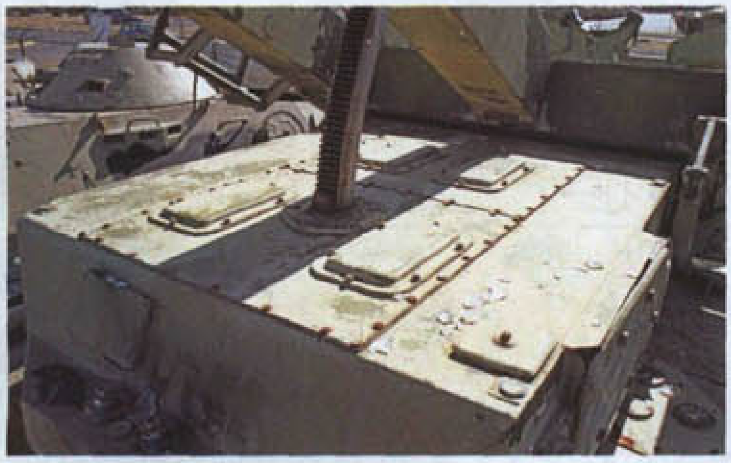
Overhead view of the 9P12 launcher array.



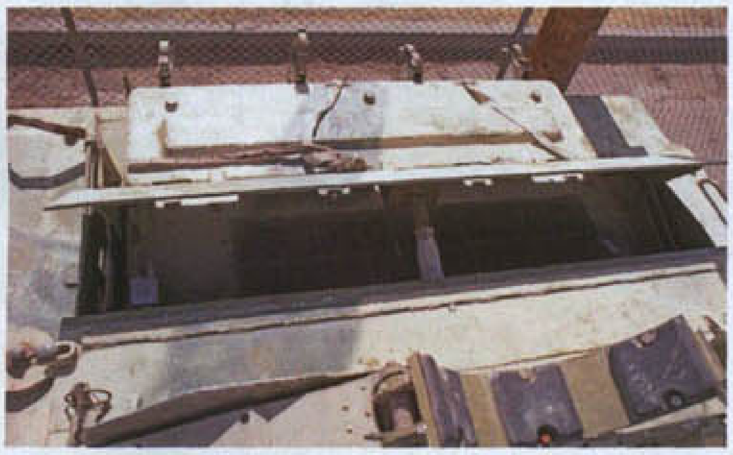
The engine deck area of the 2P25M2.



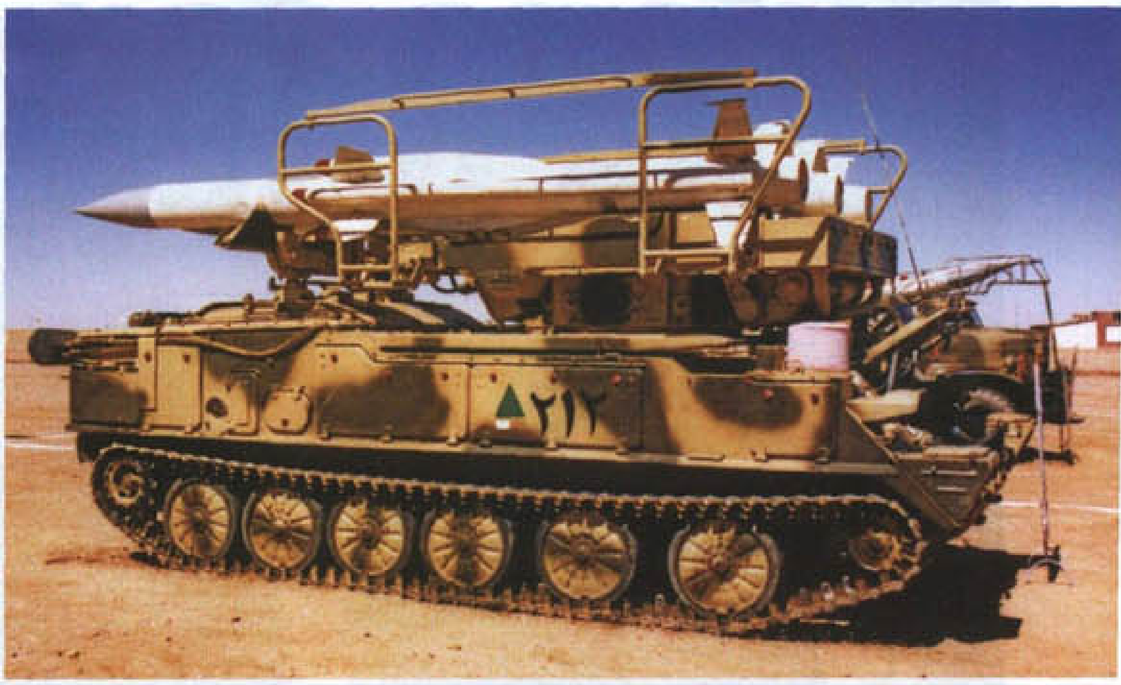
Travel lock detail on the rear deck.



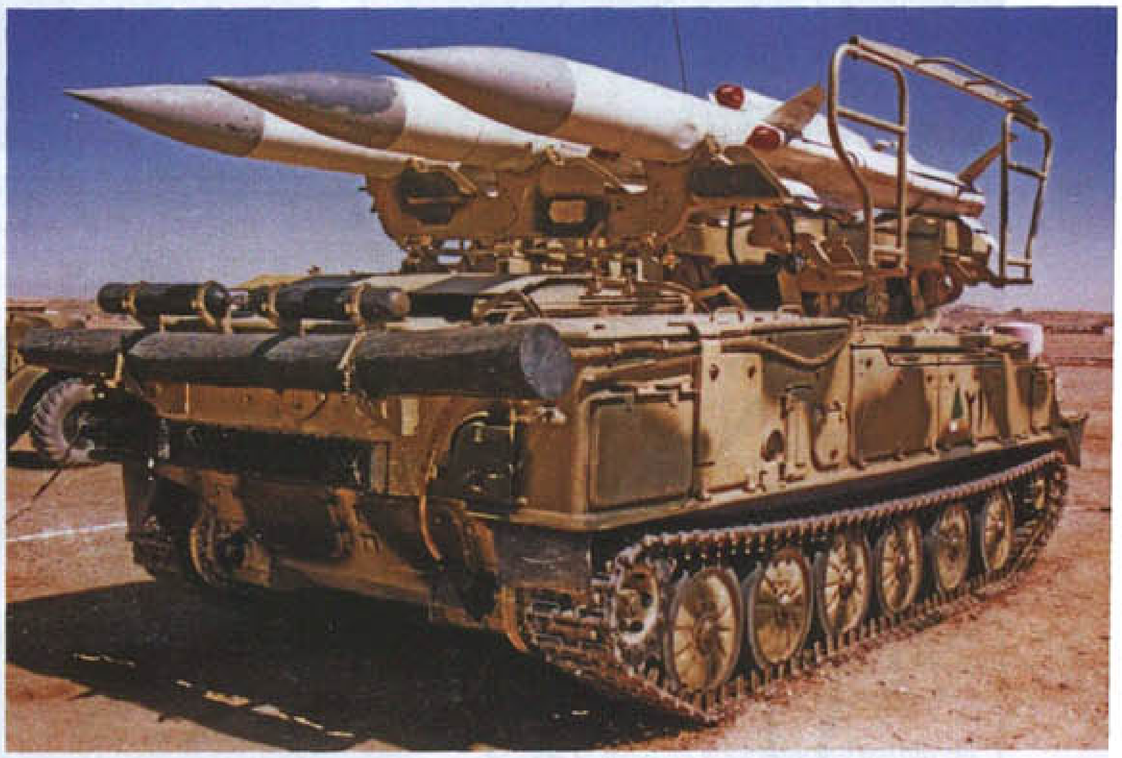
Detail around the base of the 9P12 launcher array.



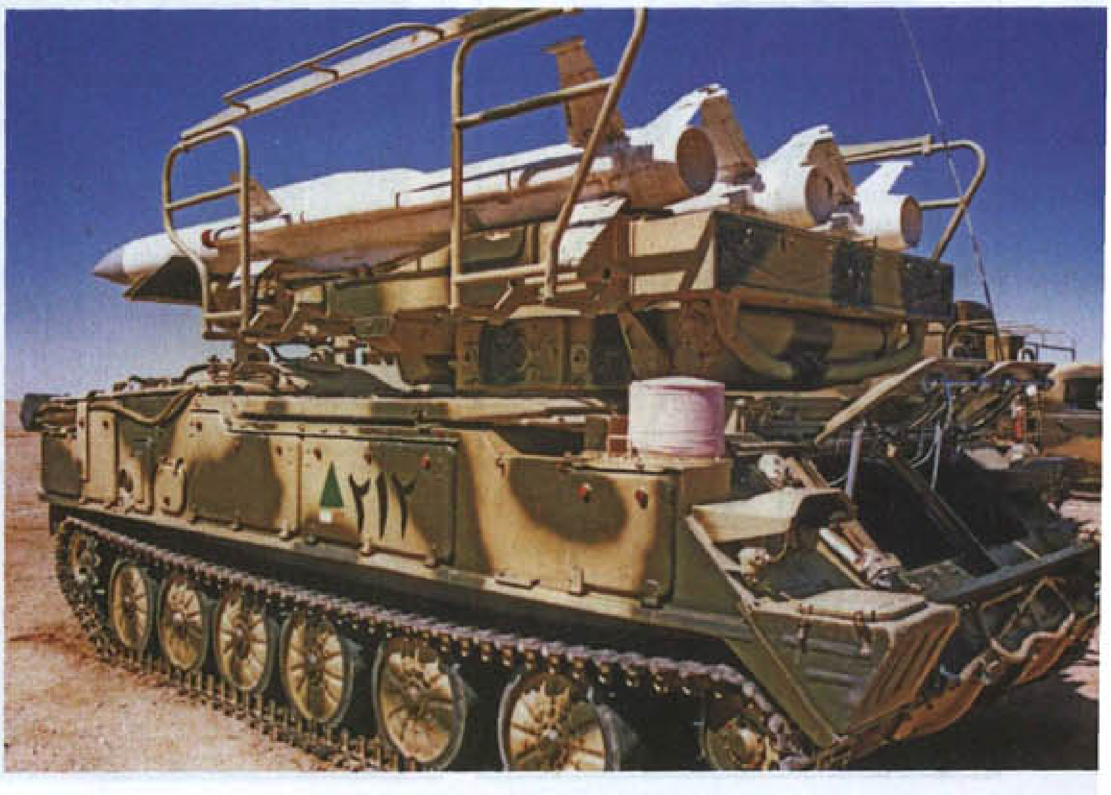
Inside detail of the blast cover which protects the engine radiator opening during missile firing.



Some of the Middle East camouflage schemes offer an attractive alternative for Trumpeter's kit like this Egyptian Kvadrat-M1. (Photo: Lon Nordeen)



ABOVE: Another view of this Egyptian 2P25M1E. The missiles are probably training rounds. (Photo: Lon Nordeen) BELOW: This Egyptian 2P25M1E carries Arabic tactical numbers on the side as well as a colourful tactical insignia. (Photo: Lon Nordeen)



Riders for Horses

Fig 1

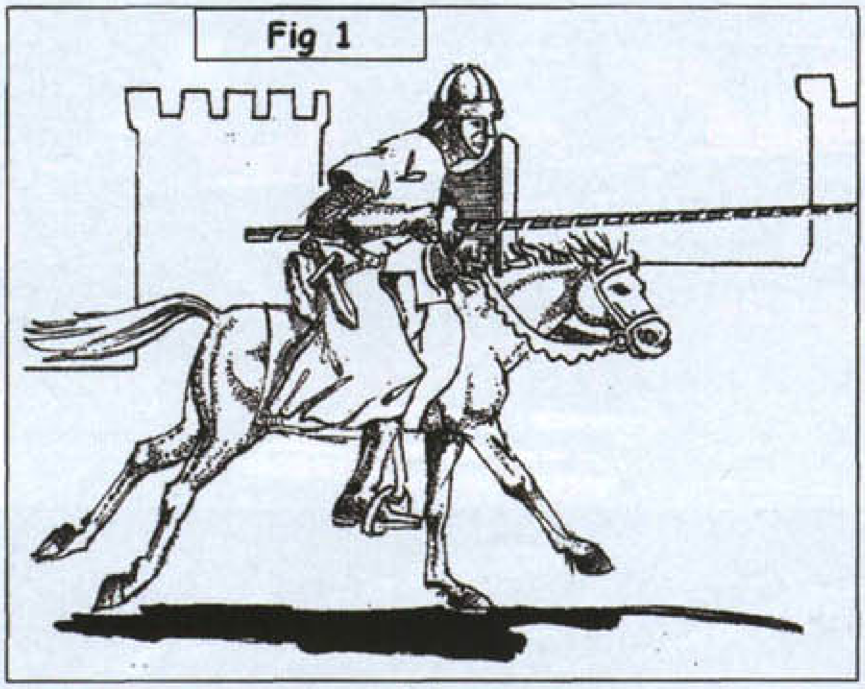


Fig 2

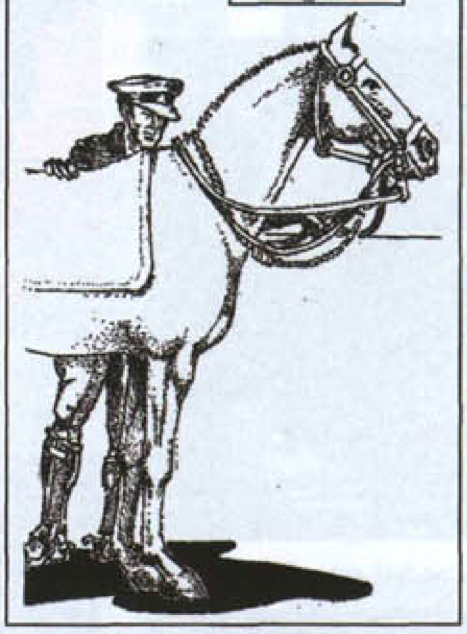


Fig 3a

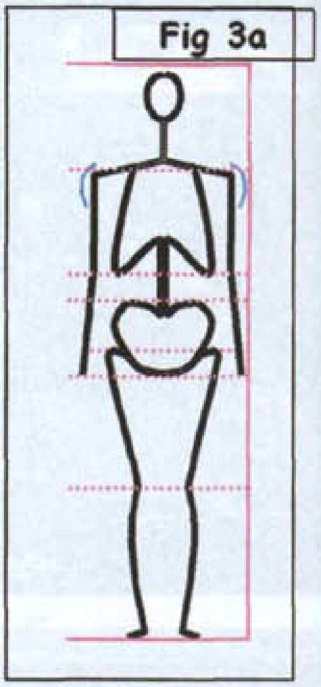


Fig 3b

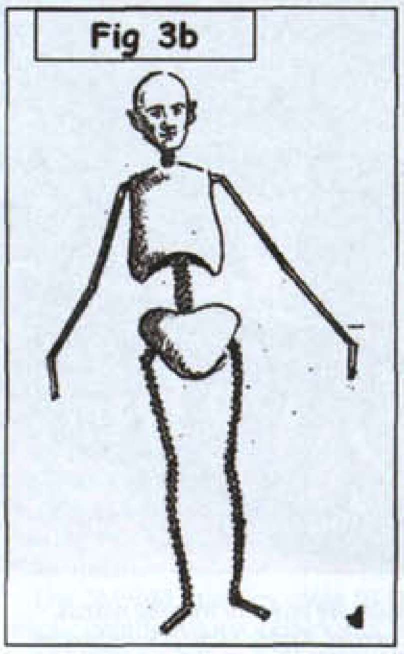


Fig 4

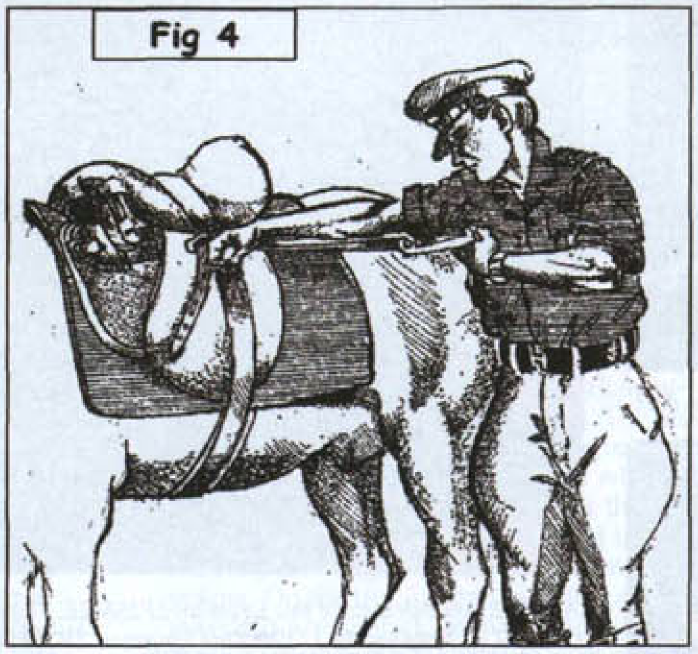


Fig 5

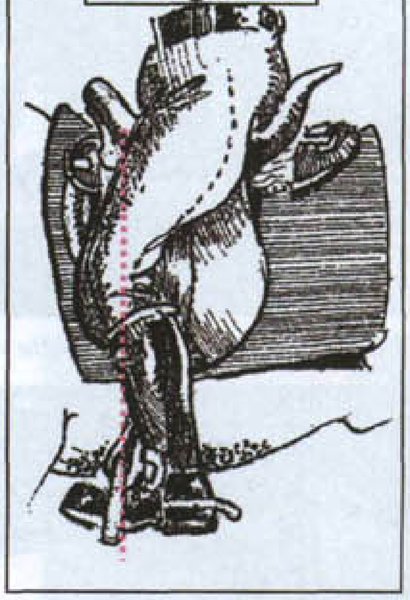


Fig 6

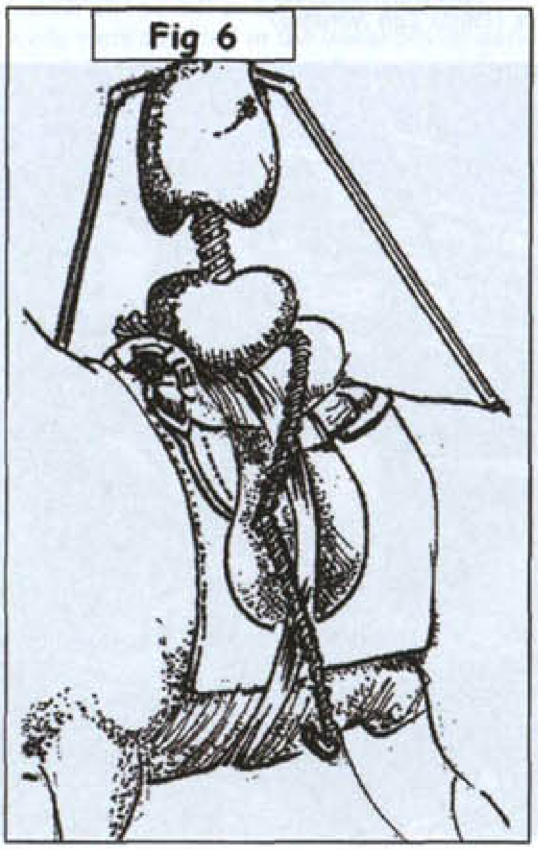


Fig 7a

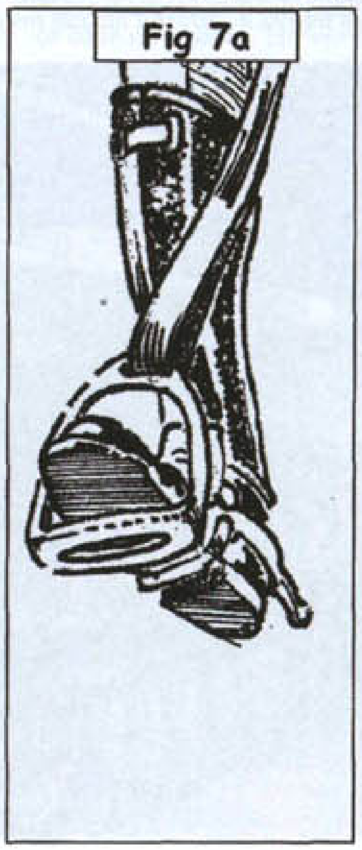


Fig 7b

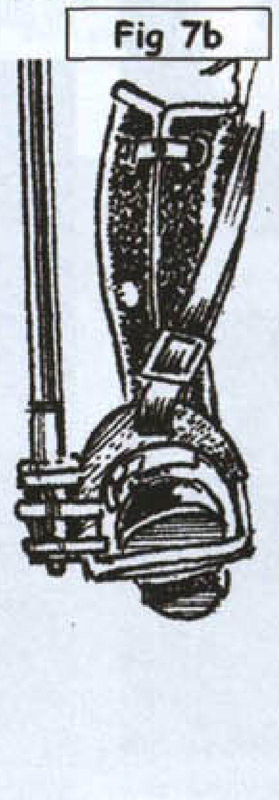
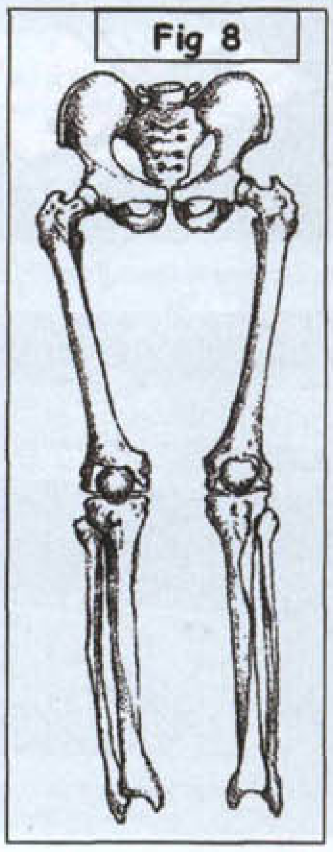


Fig 8

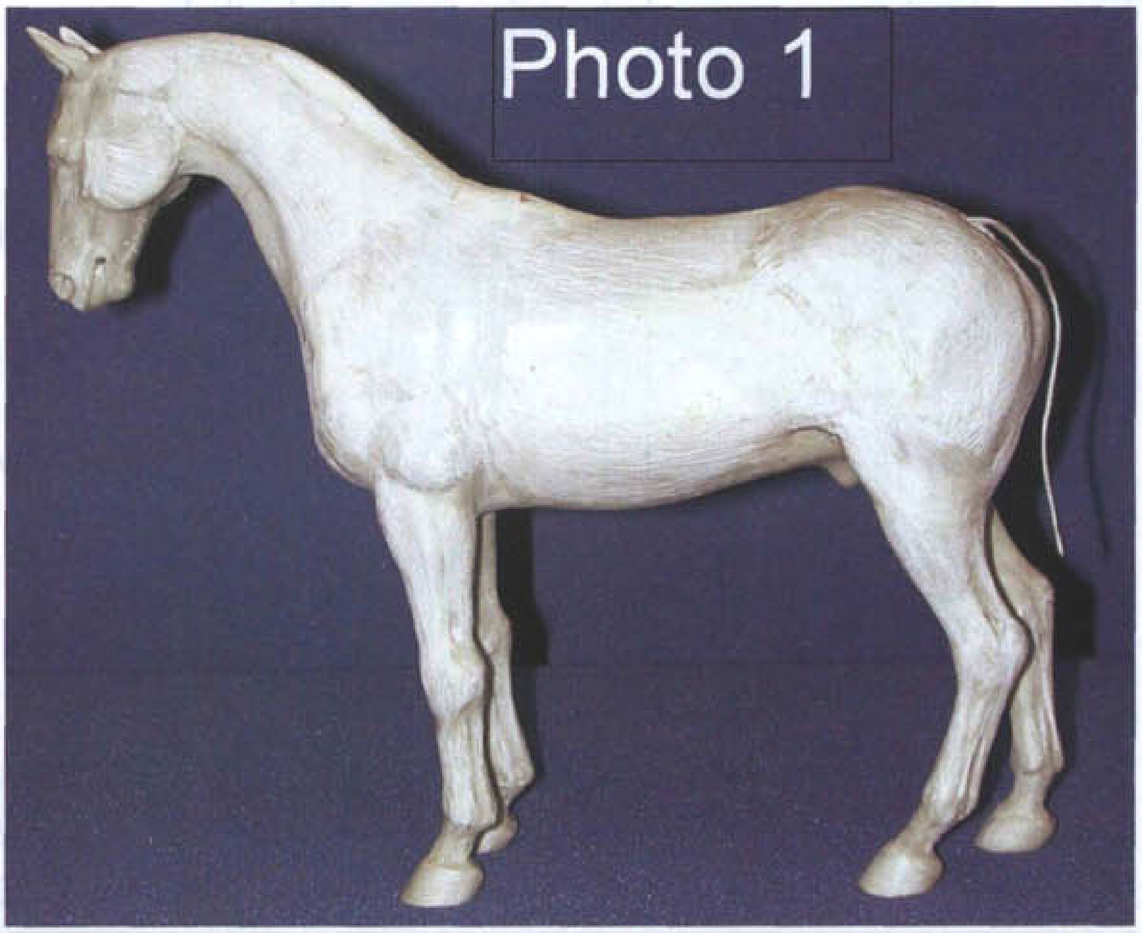


Following on his recent series on modelling the horse Charles Buchanan continues his modelling series and presents the first of a two-part feature on how to make rider figures for them

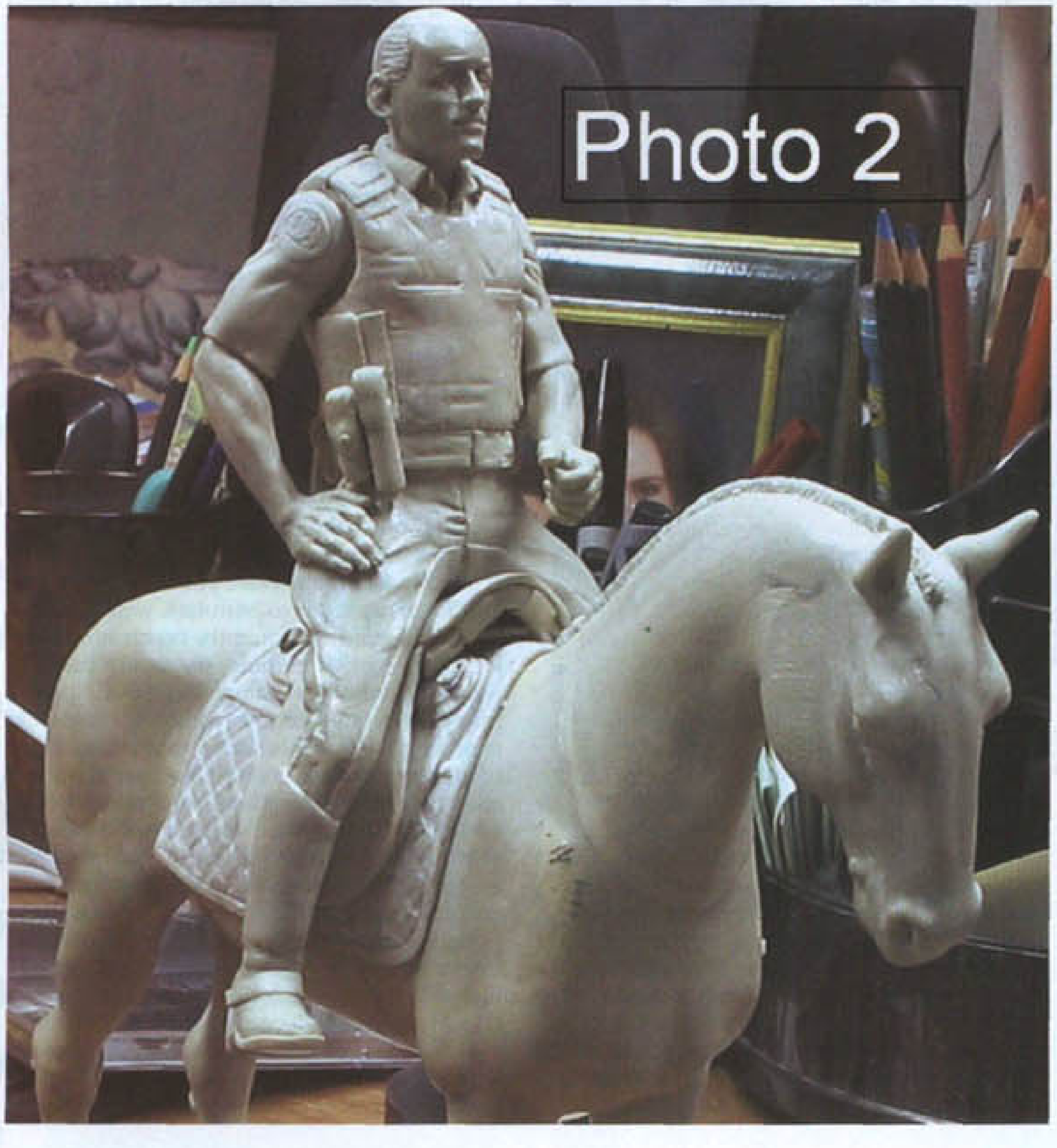
Over the years I've learned a thing or two about sculpture, and as someone who loves horses and to ride, I've also learned to incorporate some of this hands-on 'stuff' into my work, therefore by writing and illustrating these simple articles, I once again hope to impart to you what I know.

In the last of the horse-modelling series, I concluded by discussing a method for modelling a saddle and bridle; therefore I'll now finish off by showing you how to go about modelling a rider to fit. I'll also delve into some pitfalls to watch out for, plus a few tips to pay attention to so that the rider you create looks like a professional horseman, someone whose horse is an extension of his body, and not a figure that's looks as if it's been added as an after thought.

At first glance modelling a rider may seem dead easy. You may ponder after all that most of the difficult work, in the form of modelling the horse, has already been done, therefore, creating a rider is a simple feat of scratch-building or converting a figure to fit the saddle. To repeat myself, nothing could be further from the truth, for modelling a rider comes with its own set of problems, and anyone who has been around horses will know immediately if your work looks right.



Before I begin though, step back from your horse and look at its pose and form. Ask yourself what the animal has been modelled doing and what the overall 'mood' is. Not only are you are going to have to animate the rider's armature to fit, you also have the task of transmitting that atmosphere surrounding the horse into rider. Remember that simply taking facial expression into account, doesn't complete the atmosphere of 'mood', overall body language does.



As an example of this, imagine your horse being sculpted in a galloping pose as if charging an enemy position. You model the rider with the fear of God written all over his face, but he sits tall in the saddle. In real combat there was never any room for John Wayne, unless of course he's a decoy. Besides, any horseman worth his salt will know that under enemy fire that rider would have made himself a difficult target by crouching as low over the saddle as possible, unifying horse and rider at the hip into a single fighting machine. I hope you can understand this for it's an essential and definitive part of the equation. Mood dictates pose, and controls how you animate your rider's armature.

If your horse is, in your mind, of the utmost quality, ranking up there with the best, trust me the whole effect is ruined if its rider:

1. Doesn't fit the saddle properly,
2. Doesn't look the part, in other words the rider appears to be an unwilling passenger and not part of a union between rider and mount,
3. Doesn't have the correct pose for the animal's gait cycle, for example the rider sits tall in the saddle while his mount has been modelled galloping flat out, or
4. Is of the wrong scale, thus transforming your thoroughbred-cross-draft horse into a pony carrying perhaps a knight, (**Fig 1**).

There are a few other points I could highlight here, but they are of lesser importance right now and will be discussed later on.

For purposes of this article I have chosen to scratch build a mounted police officer as photographic reference. Because the piece has been commissioned, both horse and rider have been sculpted in a formal 'eyes-front' pose, therefore, the mood would be one warranting a look of 'parade ground stillness'.

From research I've established that, for purposes of crowd control, mass supersedes the need for speed, therefore **Photo 1** depicts a profile still of the mount, my interpretation of a cross between thoroughbred and draft breeds. These animals are in fact huge creatures, resembling four-legged tanks when

Fig 9a

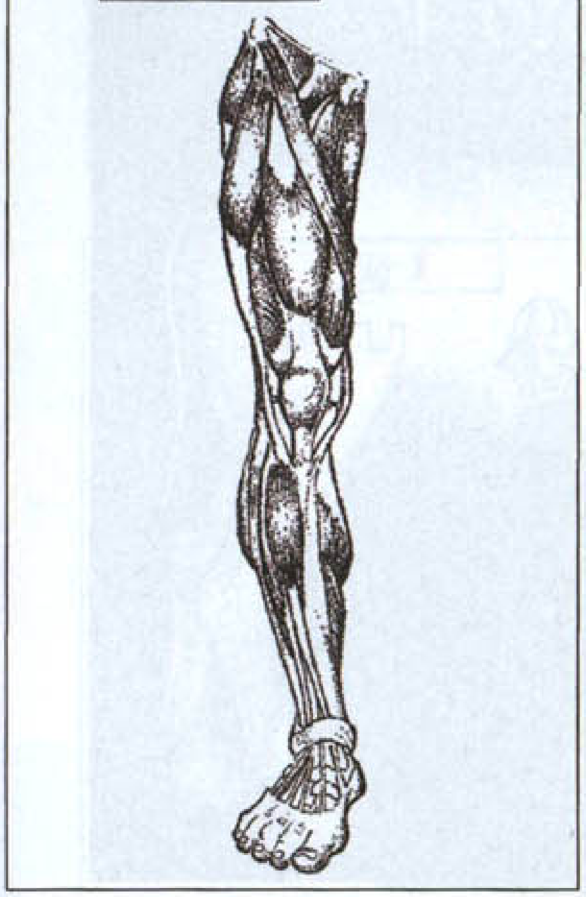


Fig 9b

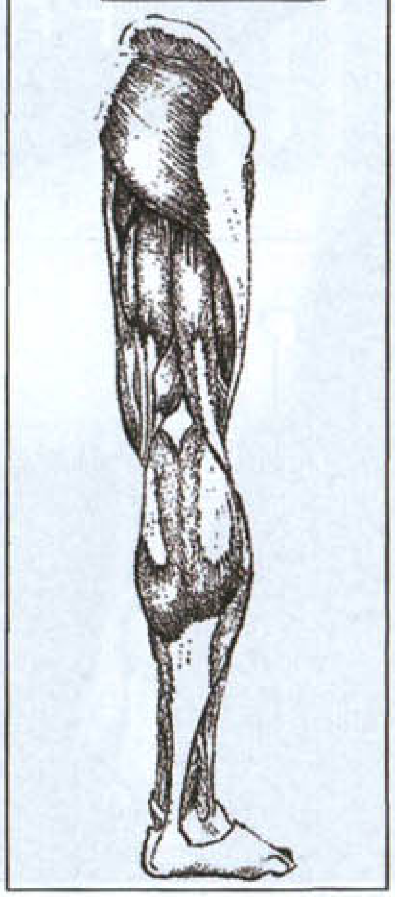


Fig 10

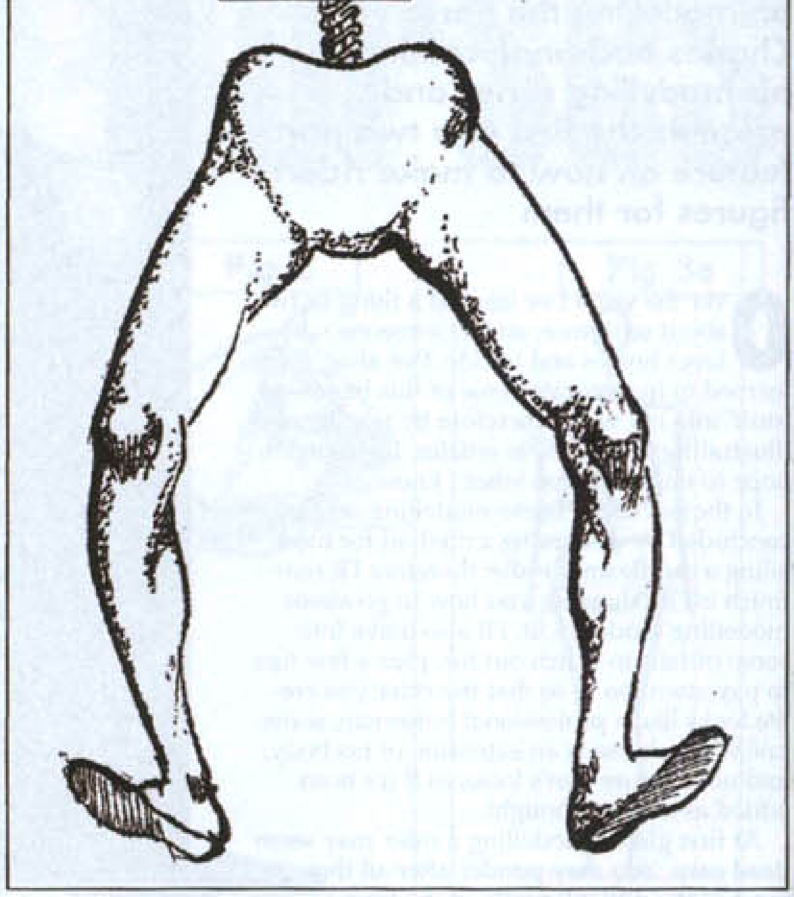


Fig 11a

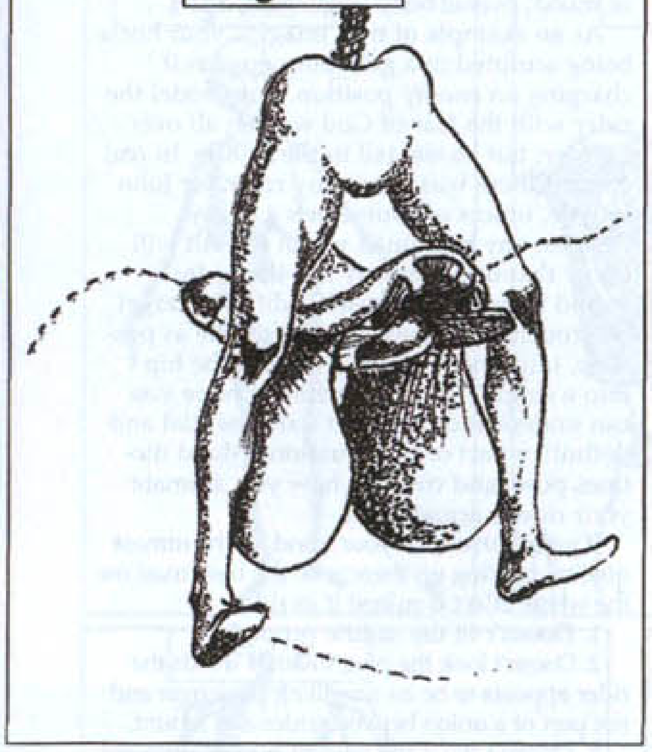


Fig 11b

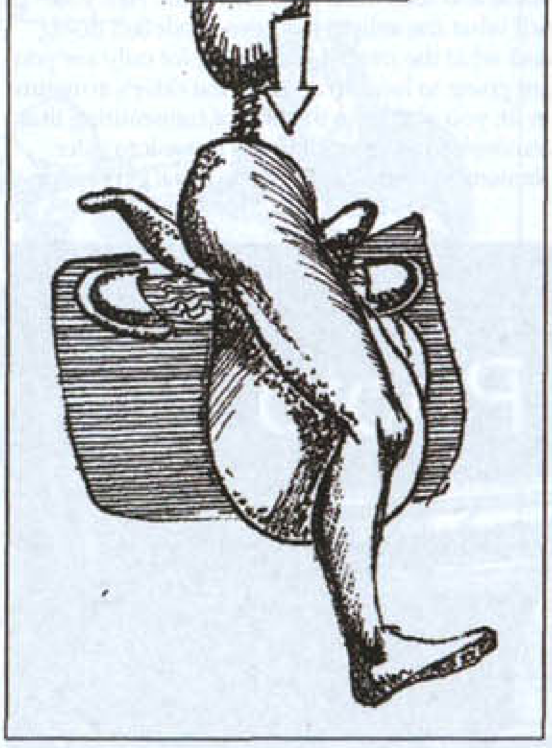
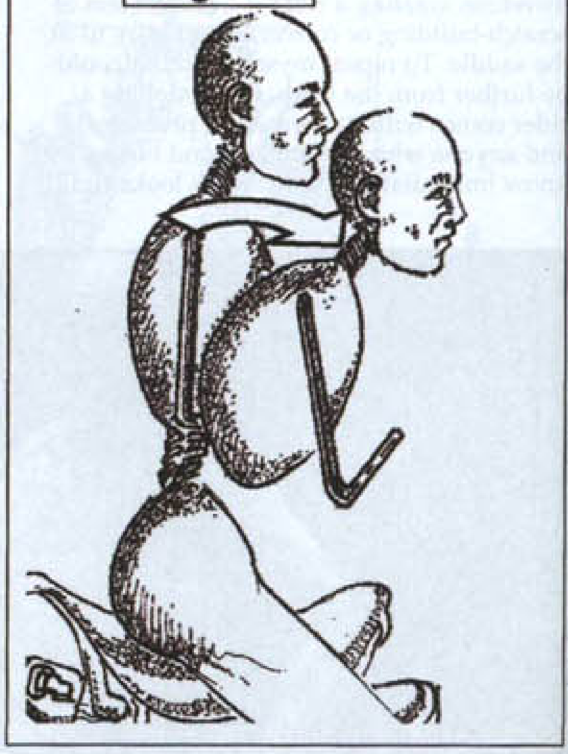


Fig 12



viewed up close. Interestingly they possess the best qualities of both breeds and are most suited to crowd control.

In terms of scale, ensure that the rider's height corresponds with the breed of horse in order to avoid **Fig 1.** A good rule of thumb here is to take a measurement from ground to the point of the horse's withers, this being equal to shoulder height of your average 5ft 10in to 6-foot man. Only his head and neck, plus a little bit of shoulder, should extend above the withers, (**Fig 2**).

Your first hands-on task is to build an armature, using your armature outline as a template, (**Fig 3a**). Adjust length and width on a photocopier until you have the correct height, then go ahead and construct your armature. Next model a basic head, solid ribcage and heart-shaped pelvic area, (**Fig 3b**). You will need to do this because when positioning the torso and limbs they will have to be animated to simulate a comfortable grip. Riders generally stay glued to the saddle by gripping firmly with their inner thighs, knees and calves. As a result of this compression, normal thigh and calf shape distort slightly.

In addition, posing the lower limbs in terms of the correct position and stirrup leather length is essential. As an illustration of correct leg positioning when seated on an English saddle, a rider sometimes measures stirrup leather length by holding the stirrup iron under his armpit. He then extends his arm along the leather until his forefinger touches its buckle just under the saddle skirt. He will then adjust length until the second knuckle of his clenched fist touches that buckle, (**Fig 4**), and once he is mounted, leg position should resemble **Fig 5** and **Photo 2**. If you've modelled a Western style saddle, stirrup leather length tends to be longer, whereas with all English style saddles they're shorter, warranting the need to 'post' when a horse trots.

A point worth noting here, which I've discovered through trial and error, when scratch-building the rider you will have to attach stirrup irons to both feet, with stirrup leathers extending up on the inside of his legs. Bearing this in mind, try and calculate what thickness the leathers will be and how many coats of paint you will apply. You will need to allow for this added thickness when modelling your rider's legs, because if it's a snug fit before stirrup leathers and paint are added, the rider won't slot into position, and you'll end up either cracking a leg or leaving an odd space between the rider's jodhpurs and saddle seat.

Using a pair of callipers for measurement, take your armature and animate knee and hip points into a correct seated position, (**Fig 6**) ensuring a loose fit.

Remember too that when a rider is seated, the feet tend point outwards slightly from the heel because of external (outward) rotation of the femur bone, (**Fig 7a**), and upward due to stirrup support of the forefoot. Another point worth noting here, which will save hours over a redo, is correct positioning of the right foot when a rider carries a ceremonial lance in the upright 'carry' position. Fixed to the outer side of his right stirrup is a simple device called a 'lance bucket', (**Fig 7b**), into which the base of the lance slots. This device permits the rider to steady his lance with ease instead of developing a painful shoulder.

If your figure holds a lance, leaving the right foot pointed outward creates alignment problems with the right hand, so make sure that the foot points straight ahead in the direction of the general line of progression.

Using a pair of callipers as a measurement tool, roughly model femur and tibia bones, (**Fig 8**). This method is not essential, but I always do it for anatomical and proportional correctness, for by doing so permits final adjustment before the armature is fleshed out (**Photo 3**).

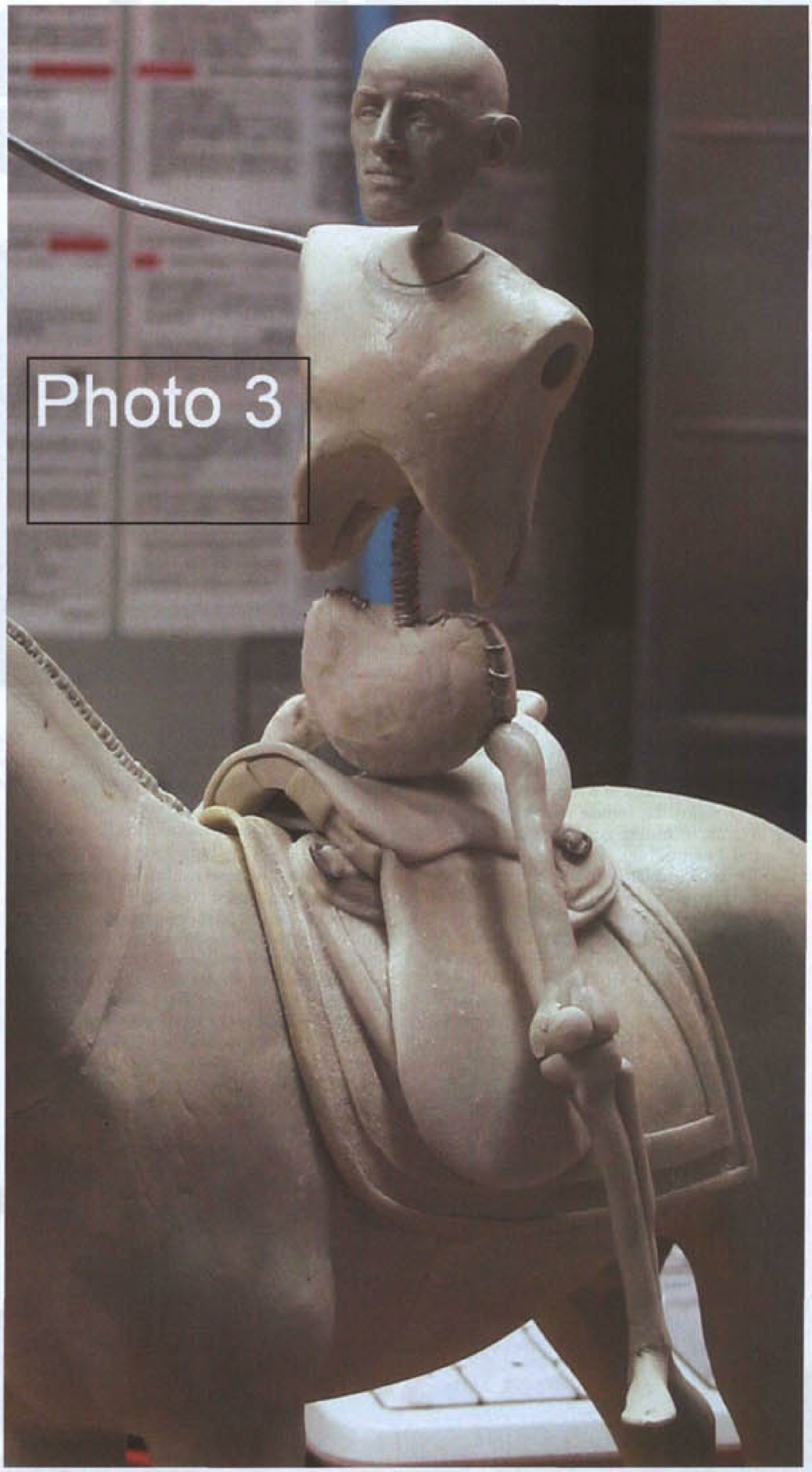


Photo 3

Once the so-called 'bone-work' is well past the curing stage, your next task is modelling calf and thigh regions. With standing figures, legs are modelled individually, allowing time for mirror image duplication of shape, but with riders this can't be done; modelling one leg at a time will offset your rider's alignment, causing major problems when you try and seat him properly. Modelling both limbs, therefore, has to be done simultaneously, leaving out foot detail. A trick here is to model the limbs so that they are slimmer than normal, for when Jodhpur and riding boot layers are added, the legs increase in size up to what is considered normal.

Model both lower limbs using anatomical charts as a guide, remembering to copy form only and no detail, (**Figs 9a & 9b**), so that your pair of modelled legs resemble **Fig 10**, slim, bony, and seated, with minimal detail and both feet pointing upwards and outwards. Interestingly a style of karate uses such a 'horse stance' for stability, so if you have never ridden but can visualize this stance in order to reproduce it, you can proceed to the next step.

Apply a thin coating of Vaseline petroleum jelly over the saddle area where both legs will come into contact with leather. Press the limbs down into position, (**Fig 11a**), so that the knees are within millimetres of contact. Remember we talked about adding stirrup leathers and layers of paint later on, well this will allow for it, and the putty is still soft enough for any outward adjustment at knee level. Whilst the putty is curing, remove and replace your figure so that it doesn't stick.

Don't be perturbed if thigh and calf putty flatten out slightly when you seat the piece. If you take your hand and press it onto the inside of your opposite arm in the area of the biceps, the upper arm appears huge and well muscled to anyone standing opposite you. Well that's what happens with a rider's legs, seating distorts them slightly. Of course they're not abnormal at all, it's just redistribution of form when thigh and calf muscle press into and grip saddle leather.

If necessary reapply another thin coating of Vaseline to the saddle leather, but clean off all traces of it from both limbs. Model the buttock areas, pressing the limbs back into position, allowing the putty to cure, (**Fig 11b**). Although slightly loose at the knees, leg position fits the saddle comfortably, with the groin and buttock regions possessing a slight concave shape.

If your figure is holding a ceremonial lance at the carry, it may be a good idea to model the right hand at this point, leaving out the rest of the arm. The hand and arm wire can then be adjusted into an aligned position so that the lance points vertically and not off at an angle.

Now that the legs are complete, adjust the armature's torso and neck sections into the desired position, (**Fig 12**), which will depend upon the horse's gait cycle. As mentioned previously, a rider's position changes dramatically as his steed either increases pace or comes under fire.

Another word of caution, don't be tempted to animate the armature's lumbar section, located in between the pelvic ball and chest piece, before both legs have been modelled and fit the saddle. If you do the rider may appear over balanced and look as if about to fall. ■

In the second article on modelling the rider following in the next issue, we'll look at position adjustments, and modelling hands and some clothing.

Snake in the

Frank V. De Sisto produces a late Second World War German Panzer IV/70 (V) in 1:35 scale using the Dragon Models kit and some aftermarket accessories

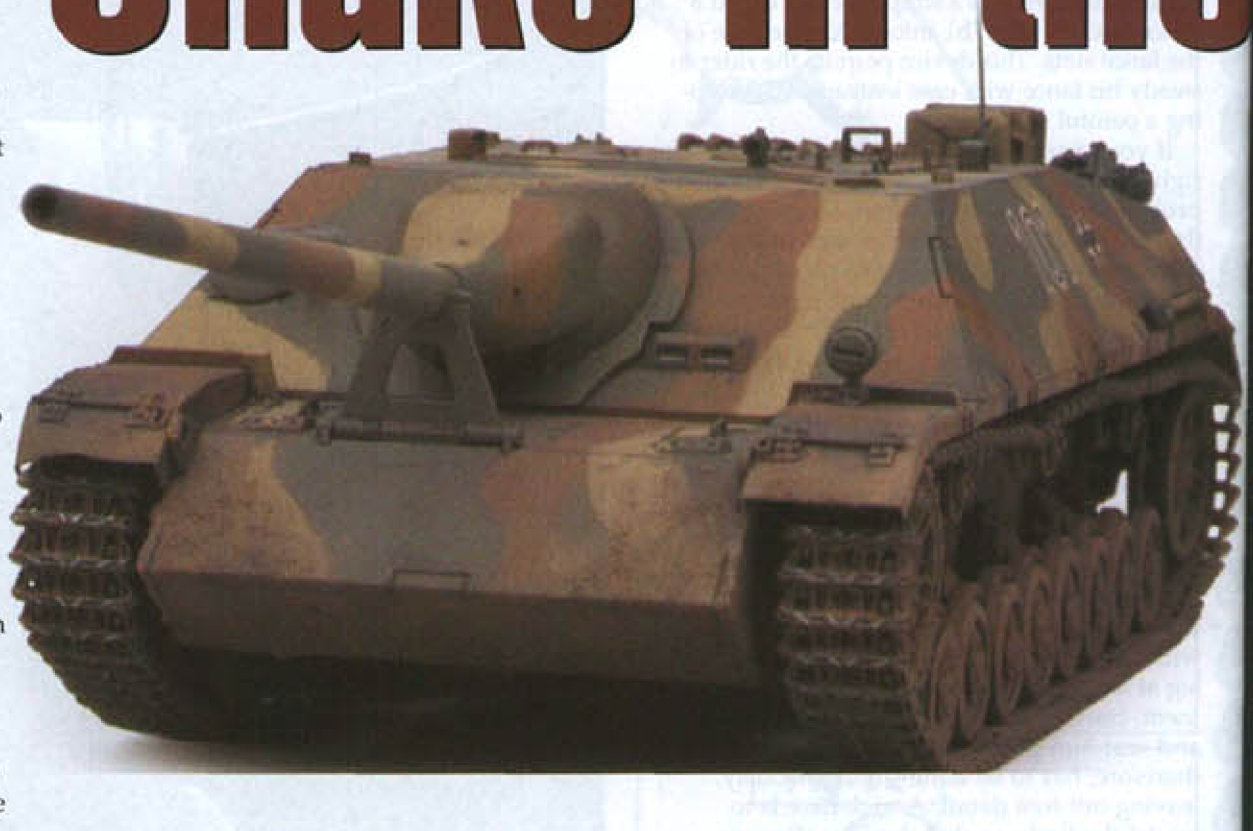
During the Second World War, in its quest to produce more lethal combat vehicles by mounting the largest possible gun that a given chassis could handle, Germany's *Waffenamt* (Ordnance Department) responded to the challenge with a request to the Reich's armaments industry for the design of the *Panzer IV/70 (V)* tank destroyer.

A demonstration of a prototype was held in the presence of Adolf Hitler (for his birthday) on 20th April 1944. As a result of the Führer's usual 'enthusiasm', an order came to produce an astonishingly unrealistic (and ultimately unattainable) 800 vehicles per month! In fact, due to the worsening war situation, approximately only 940 *Panzer IV/70 (V)*s were produced by the War's end.

As was typical for German AFVs, the name of the vehicle continued to evolve, with Hitler ordering it to be called *Panzer IV lang* M, on 18th July, 1944, with the 'V' denoting the firm of Vomag, which was responsible for detailed design of this *Jagdpanzer*. However, to distinguish the vehicle from the *Panzer IV lang* with the L/43 or L/48 gun, the troops referred to the vehicle as *Panzer IV/70 (V)*, which eventually was officially recognized by the *Waffenamt* in November 1944.

Based on the chassis of Krupp's workhorse *PzKpfw IV* series, the vehicle was 8.5 metres long (overall, including gun tube), 3.2 metres wide and 2 metres high. The latter feature made the vehicle relatively easy to conceal in an ambush position. When combat loaded, the vehicle weighed 25.5 metric tons. It was powered by a Maybach HL 120 TRM water-cooled V-12 gasoline engine, which developed 265 horsepower at 2,800 rpm. The vehicle had a maximum cross-country range of 130 km. at 15-18 kph. The ZF S.S.G. 76 transmission had one reverse and six forward gears, which could allow a top road speed of 40 kph.

For internal and external communications, the four-man crew (commander, gunner, loader and driver) was equipped with a *Fu 5* radio transceiver (connected to a 2-metre rod antenna) and a *Fu 2* intercom. A command vehicle could mount an additional *Fu 8* transceiver connected to a 1.6 metre star antenna (*sternantenne*).

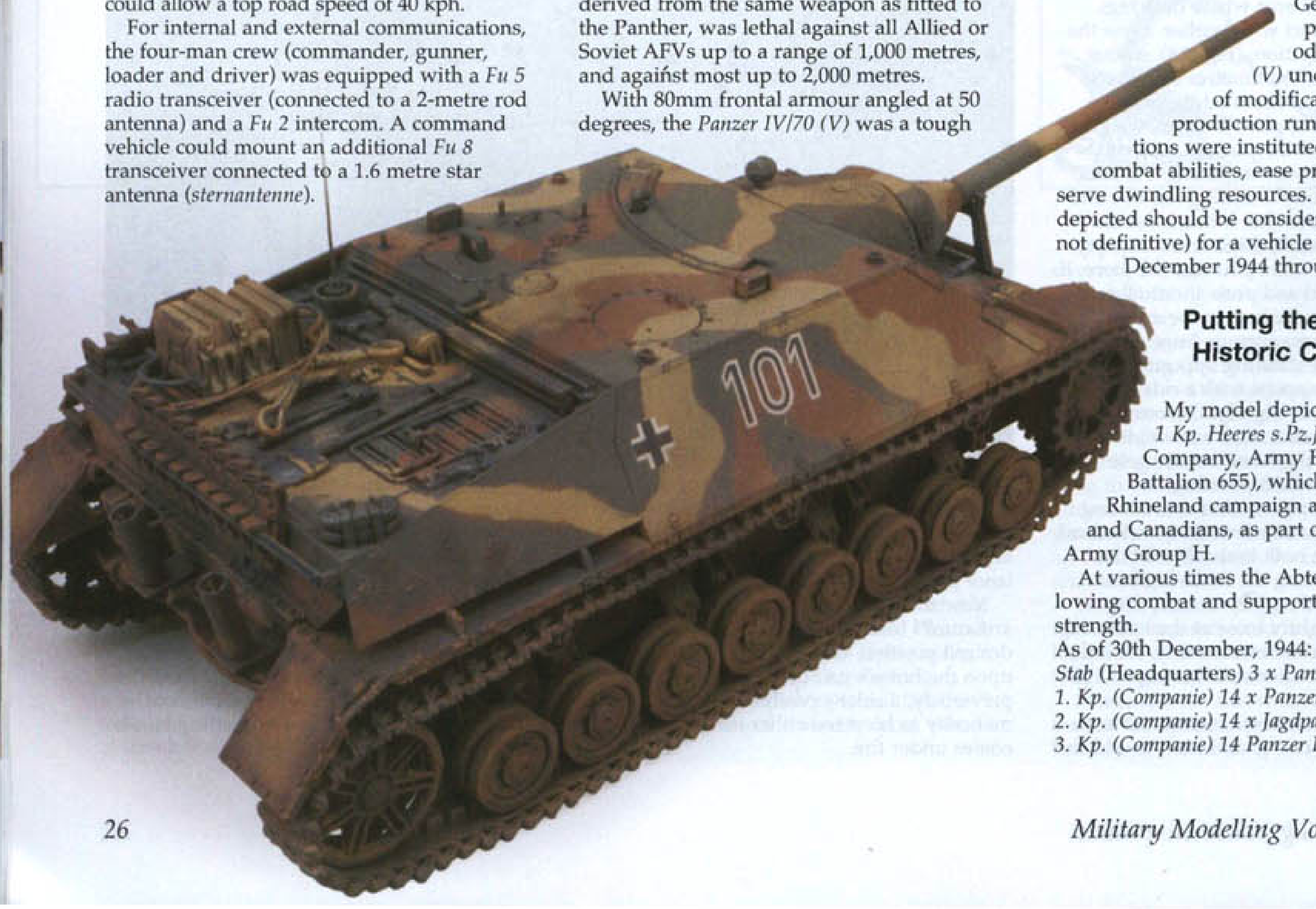


Low and sleek, the Panzer IV/70 was relatively easy to conceal in a defensive ambush position, and could be devastating against allied armour at medium and long range. However, the lack a turreted main armament meant that it had very limited capabilities in the attack.

The main armament, a 7.5 cm. Pjk 42 L/70 was provided with 60 rounds of ammunition. Secondary armament consisted of an MG42 in a socket mount to the right of the main gun, and a swivelling *Nahverteigungeswaffe* (close-in defence weapon) on the case mate roof, which fired smoke or anti-personnel grenades. Aside from their personal side arms, there was an MP40 or MP44 stowed internally for the crew's use. The main gun, derived from the same weapon as fitted to the Panther, was lethal against all Allied or Soviet AFVs up to a range of 1,000 metres, and against most up to 2,000 metres.

With 80mm frontal armour angled at 50 degrees, the *Panzer IV/70 (V)* was a tough target to penetrate from the front, but with 40mm sides, it was easily vulnerable to most allied and Soviet weapons, including obsolescent anti-tank rifles. The chassis was robust and mechanically reliable, but overloaded (especially in the front), by the new main gun. The vehicle was also tactically limited, particularly in an offensive mode, by the lack of a main gun in a rotating turret.

A typical example of Germany's wartime production methods, the *Panzer IV/70 (V)* underwent a number of modifications during its production run. These modifications were instituted to improve its combat abilities, ease production, or conserve dwindling resources. My model as depicted should be considered as typical (but not definitive) for a vehicle produced from December 1944 through January 1945.



Putting the Model into a Historic Context

My model depicts a vehicle of the *1 Kp. Heeres s.Pz.Jg.Abt. 655* (1st Company, Army Heavy Anti Tank Battalion 655), which served in the Rhineland campaign against the British and Canadians, as part of Blaskowitz's Army Group H.

At various times the Abteilung had the following combat and support vehicles on strength.

As of 30th December, 1944:

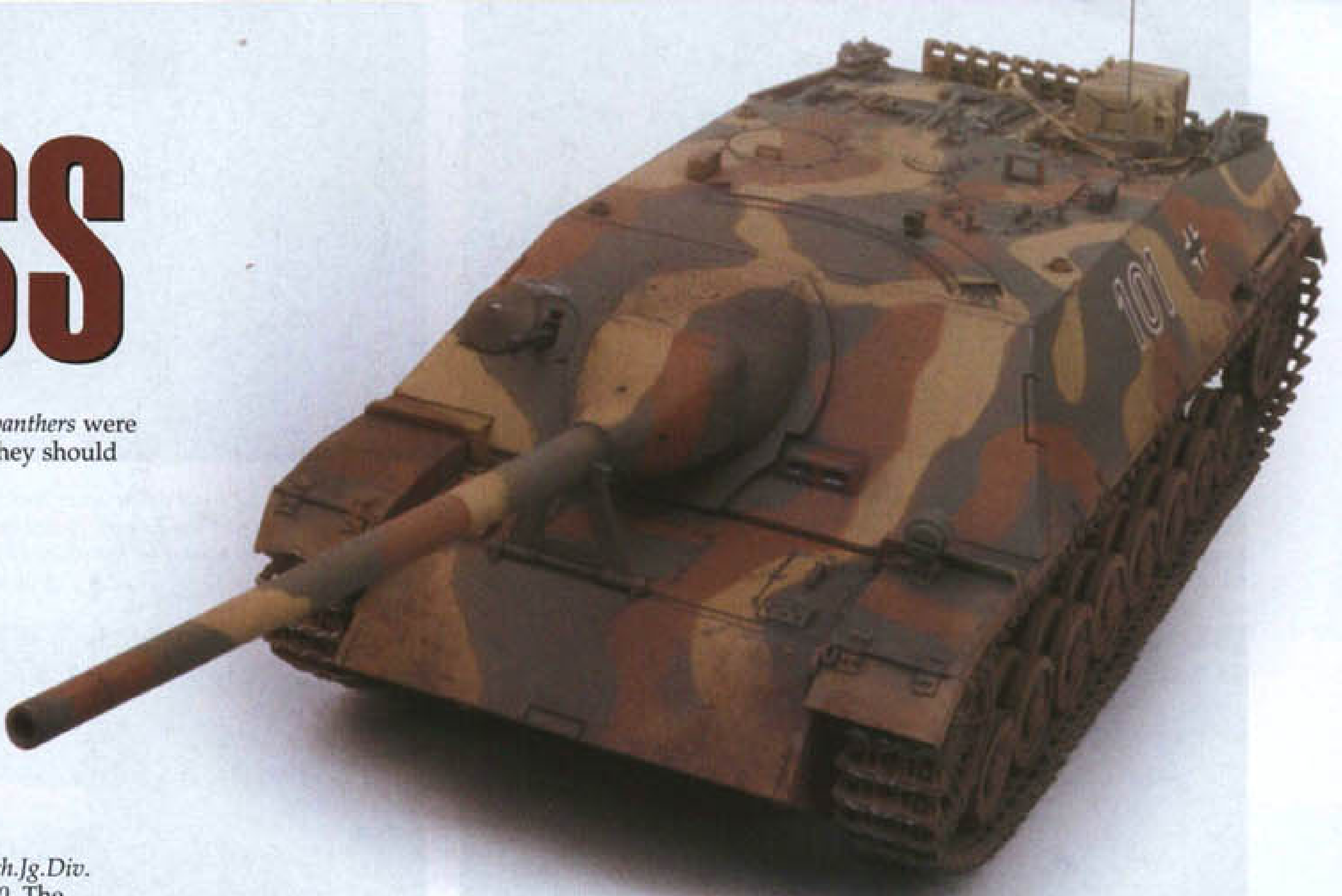
Stab (Headquarters) *3 x Panzer IV L/70 (V)*

1. Kp. (Companie) 14 x Panzer IV L/70 (V)

2. Kp. (Companie) 14 x Jagdpanther

3. Kp. (Companie) 14 Panzer IV L/70 (V)

Grass



The finished model. The decals were from a Tamiya aftermarket set, but are rather standard items and can be obtained from a number of sources. They were applied over a Poly Scale acrylic gloss coat, using the Super Scale system, consisting of a solvent and setting solution. A second gloss coat was applied and allowed to cure prior to beginning the weathering process. An oil-based wash was applied and 'minimized' with a cotton swab, followed by a dull coat. Weathering continued with a combination of materials (acrylic paint and modelling paste, plus pastels), which was followed with a final dull coat.

(It is not confirmed if the *Jagdpanthers* were available at that time, although they should have been.)
Plus in support:
2 x Bergepanther.
4 x Flakpanzer Möbelwagen.
4 x Flakpanzer Wirblewind.
As of 4th April, 1945:
12 x Panzer IV/70.
8 x Jagdpanther.
1 x Bergepanther.
3 x Flakpanzer Wirbelwind.
3 x Flakpanzer Möbelwagen.
As of 23rd April, 1945:
10 x Panzer IV/70.
5 x Jagdpanther.

(*1. Kp.* was attached to *7. Fallsch.Jg.Div.* with five operational *Panzer IV/70*. The remainder of the *Abteilung* became corps reserve of the *II. Fallsch. Korps* with five operational *Jagdpanthers* and five, operational *Panzer IV/70*.

On 8th February 1945, the British and Canadians began Operation *Veritable*, the attempt to gain the *Rhine* River. Operating in the winter and over flooded terrain, the campaign was noteworthy in that a number of combat actions involved amphibious operations carried out at night. Operating successfully in three of the most difficult environments (at night, in cold weather and on inundated terrain), at the same time, is indeed a tribute to Montgomery and his officers and men. Much use was made of LVT amphibian tractors in assault and support roles, as well as Ram Kangaroos as Armoured Personnel Carriers on suitable ground.

During this campaign, '655 saw action in support of the *I.Abt./Pz.Gren.Rgt. 156* of the 116th Panzer Division (from XLVII Korps) where, on 12th February, it blunted an advance of the British 43rd (Wessex) Division along the Goch-Kleve road, claiming six armoured cars and a tank destroyed. Elements were also detached in support of the 84th Infanterie Division (from 11 Fallschirmjäger Korps). However, by the 17th, the Wessex Division had produced an 8,000-yard wide rupture in the Siegfried Line, which allowed the 15th (Scottish) and 51st (Highland) Divisions to smash their way through Hitler's Westwall by the 22nd.

Operation *Grenade*, the US 9th Army's part of the dash for the *Rhine*, began on 23rd February, almost two weeks later than its projected start time of 10th February, due to flooded terrain around the *Roer* River. By 3rd March, the US 9th and Canadian 1st armies linked up at Geldern in Germany. The entire operation cost the Germans at least 60,000 dead and wounded, with another 250,000 taken prisoner. Material losses were staggering as well. But, by far the most devastating loss to the Germans was the Ludendorf Railroad Bridge over the *Rhine* at Remagen, which, with its capture by the US 9th Armored Division on 7th March, became Eisenhower's springboard for the final thrust into the heart of Nazi Germany. On 23rd March, the British were crossing the *Rhine* at Wesel and on the 24th, Bradley's armies breached the *Rhine* in three places.

Pz.Jg.Abt. 655 fought a dogged retreat across the *Rhine* and *Weser* Rivers, clashing with the British 7th Armoured Division at the *Weser* River bridge, near Thedinghausen, on 8th April. They finally surrendered to the Canadians, probably in the Oldenburg area, in early May of 1945.

Dragon Models' Kit

To build this replica, I used the DML kit No.9043 of the *Jagdpanzer IV L/70 M* Command Version. The kit also includes parts to make the L/48-armed version (and in fact, out-of-the-box is more suited to that version), plus parts to add the *Sternantenne* (star antenna) in order to model a command vehicle. The only thing really missing, (although mounts are provided) are the side shürzen (skirts) for protection against anti-tank rifle fire.

The DML kit can be built as a fairly accurate representation of a vehicle produced from late 1944 through the end of March 1945. However, it has a couple of errors and some detail glitches as a result of being based on the DML *Jagdpanzer IV L/48*. I guess the biggest problem is the too thin L/70 gun tube, while a minor problem concerns some details on kit part A-15 (inner gun mantlet casting), which, according to references, is more appropriate for an L/48-armed vehicle. Fit of most parts was excellent with only the upper-to-lower hull join requiring careful attention, especially at the bow.

I used the following after-market items to help upgrade the kit:

- Fruilmodel tracks, later style with closed, notched guide horns and small ice spuds on the track face, ATL28.
- Two different Eduard photo-etch sets, item numbers 35199, DML *Jagdpanzer IV/70 (A)* and Zoom set TP 005, Tool Clips German. The neat thing about the tool clips in the Zoom set is their ease of use since each is a simple-to-fold one-piece affair. And, they come in four different styles.
- Turned brass gun tube from the Chesapeake Model Designs' *Panther Ausf F Schmalturm* conversion. This kit, by the way, is the most accurate and complete one of its kind on the market, for all you 'Pantherfiles'.
- Tamiya *PzKpfw IV* tool set.
- Tamiya German jerrycan set (newer release).
- Drive sprockets and idler wheels from a scrapped Tamiya *PzKpfw IV Ausf J* kit.
- Casting numbers and letters from the accessory sprue in the Academy M10 GMC kit.
- Model Kasten styrene 'half' wing nuts.
- New Connection/Scratch Yard braided steel tow cable.

I also used Evergreen styrene sheet and strip along with Plastruct styrene hex rod to add some small details, brass rod for the antenna and some other little bits, plus soft copper wire. (See later for details of the modifications and additions I made.)

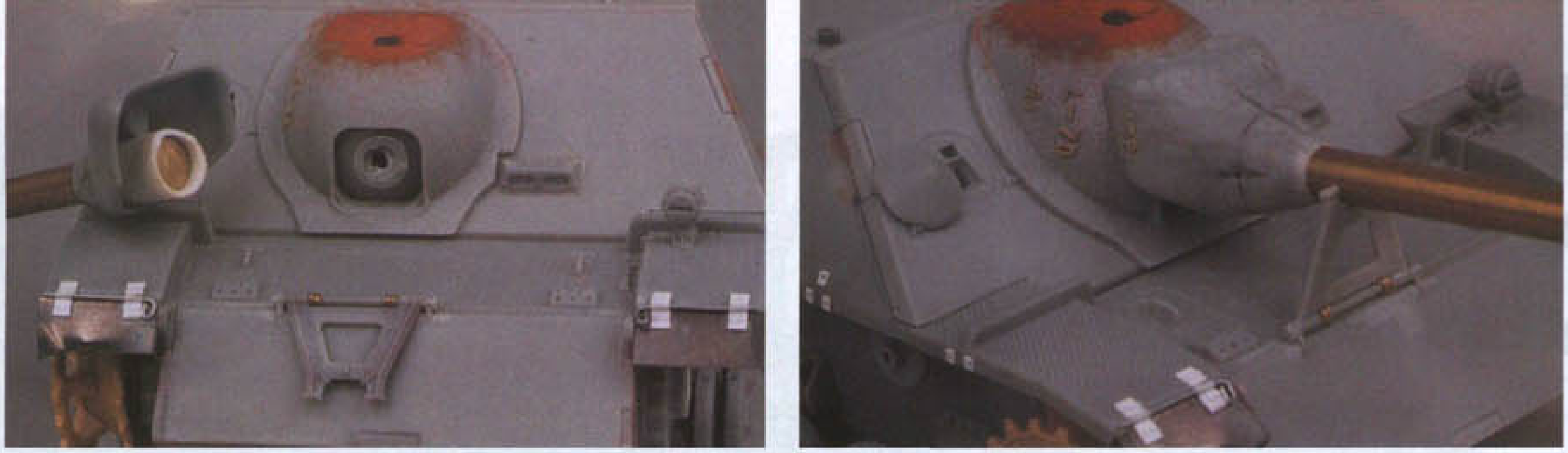
The styrene hex rod, in particular, is very useful for many things. It comes in a variety of thickness and is easily sliced 'salami style' per the 'Zaloga method', using North West Short Line's 'Chopper' cutting tool. It is a much cheaper alternative than any punch-and-die set on the market, although one of these days I still have to get one of those!

Suspension

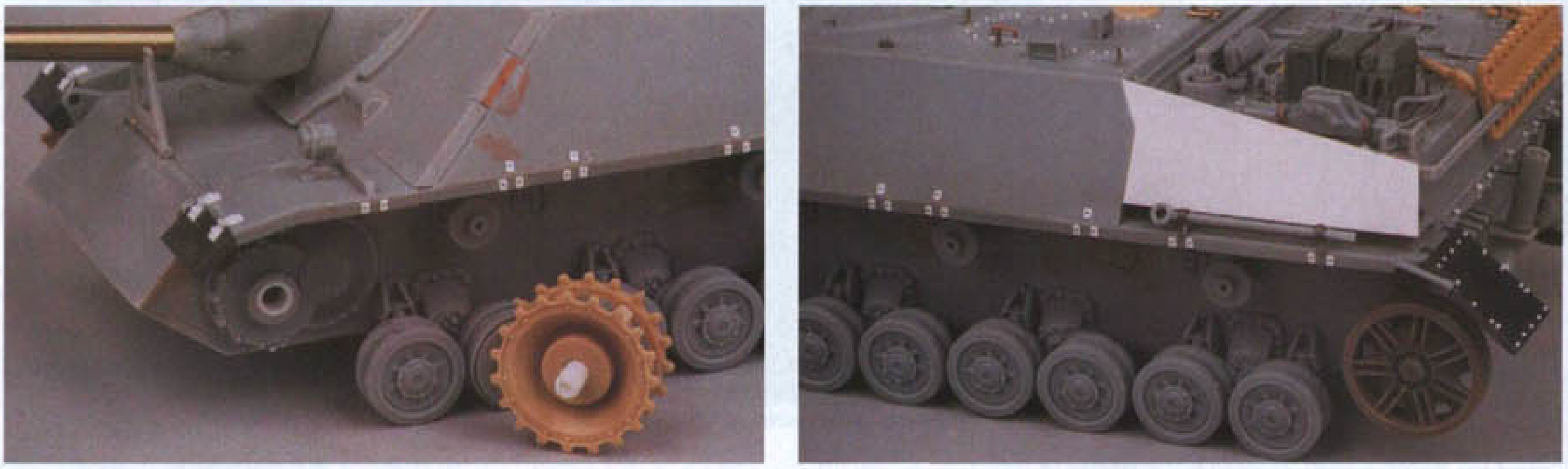
I usually start a model from the 'ground up', referring to, but not strictly following, the kit's instructions. This is to accommodate my style of finishing as well as to ensure that small bits don't get destroyed during any of the rough handling that accompanies construction. So, off we go!

(Please note that for best results, the modeller should refer to the drawings in the Panzer Tracts book listed in the reference section when detailing this model.)

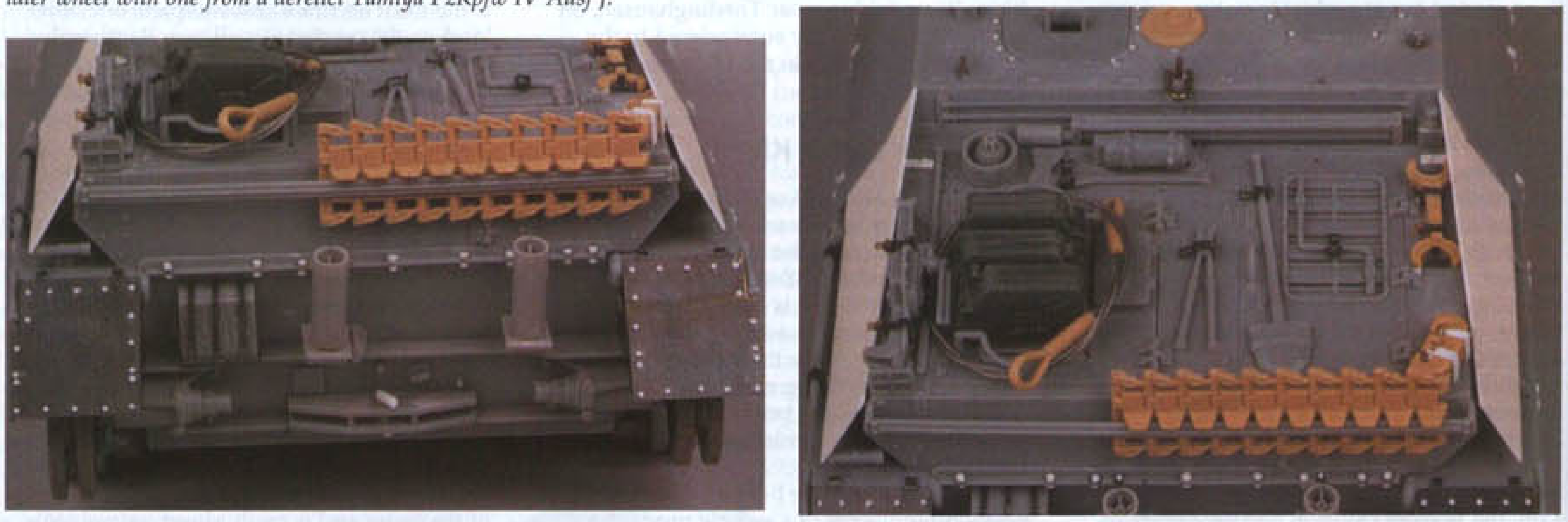
First, clean off the marks on the hull side for the fourth return roller station and the unused filler cap locations. Then fill in the two holes, at the upper sides, at the rear, with styrene rod and super glue. These are to



ABOVE LEFT: Note the way the styrene plastic tube was used to mount the brass gun tube to the kit's cut down inner mantlet. Also, note how the new fender hinges (made from styrene strip and hex rod, stretched styrene tube and steel wire), were used to mount the Eduard etched brass mud flap. ABOVE RIGHT: Here we see the soft copper wire added to the gun travel crutch, the foundry casting numbers from Academy on the inner and outer mantlet parts, and the re-textured inner mantlet top with the Eduard etch part in the centre. Note also the setscrew holes at the 12, 3, 6 and 9 o'clock positions on the Topfblende mantlet.



ABOVE LEFT: This is how I used styrene tube to modify the kit's final drive housing to take the Tamiya PzKpfw IV Ausf J drive sprocket. Also note the drilled-out mounting pads for the schürzen" stand-off armour. ABOVE RIGHT: I decided to replace the rear armour panel with styrene sheet, and to replace the kit's idler wheel with one from a derelict Tamiya PzKpfw IV Ausf J.



ABOVE LEFT: On the lower part of the hull rear can be seen the multitude of bolts I added with styrene hex rod, cut with a Chopper tool. The bolts went on the rear etch mud flaps (using the etched marks provided by Eduard as placement guides), as well as the flange that connected the engine deck assembly to the lower hull. Also note the Eduard etch on the jack block and the styrene rod used to make up the 'L'-shaped pin, which is mounted on the tow bracket. ABOVE RIGHT: The engine deck had Eduard etch clamps added to the tools and jack, plus strip styrene to make the clamps for the tow hooks. Where needed, I used 'half' wing nuts from Model Kasten to dress up the tool clamp assemblies. The jerrycans and spare track section are from Tamiya, as are the tow cable ends, which I attached to a steel cable from New Connections. Note also the styrene strip used to mount the side armour plates, at the upper left and right hand corners of the engine deck.

mount the earlier style tow hooks. Sand the surfaces smooth to get rid of any marks or evidence of your modifications.

I decided to modify the kit's final drive housings (parts F-5) to accept the crisper Tamiya drive sprockets from their *PzKpfw IV Ausf J* kit. I did so by trimming the mount's axle back and decreasing the diameter of the resulting hole with plastic tube. This will then accept the plastic tube axle that you will insert into the back of the Tamiya drive sprockets. The new axle will be held in place by the Tamiya drive sprocket's internal poly caps, or, if the modeller wishes, it can be simply glued in.

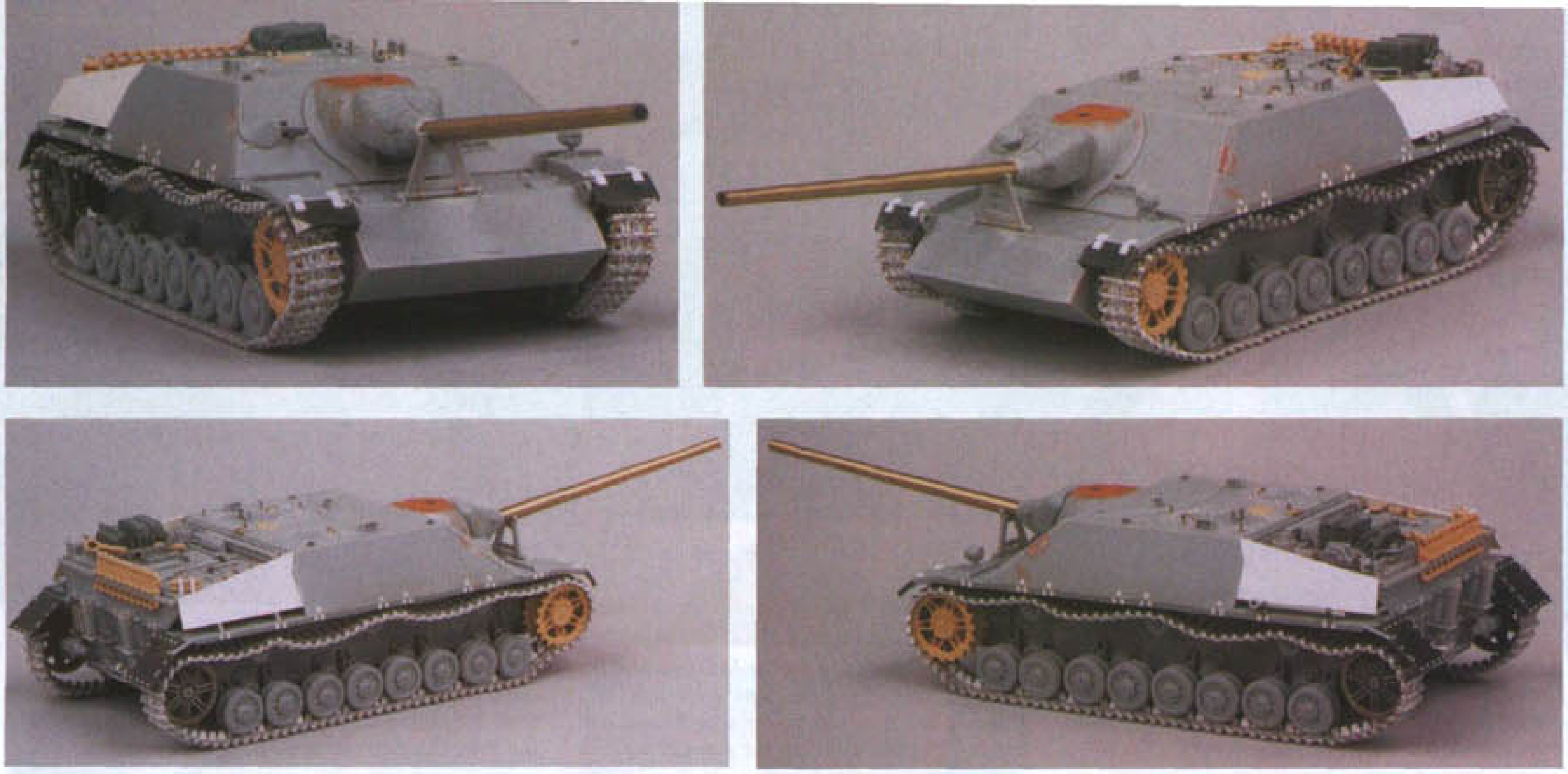
As I wished to model a vehicle seen in a photo, I decided to replace the kit's welded tube idler wheels with cast idler wheels from a Tamiya *PzKpfw IV Ausf J* kit. This is a drop fit onto the kit axles (parts F-3). Glue the axles to the idler, but do not glue to the kit until after you've 'sized' the track for proper tension.

The outer return rollers all had sink marks in their centres. These were covered with a bolt (to represent what I hope is a grease nipple) cut from .030 styrene hex rod. The outer return rollers were not added until final assembly, just after the tracks were fitted.

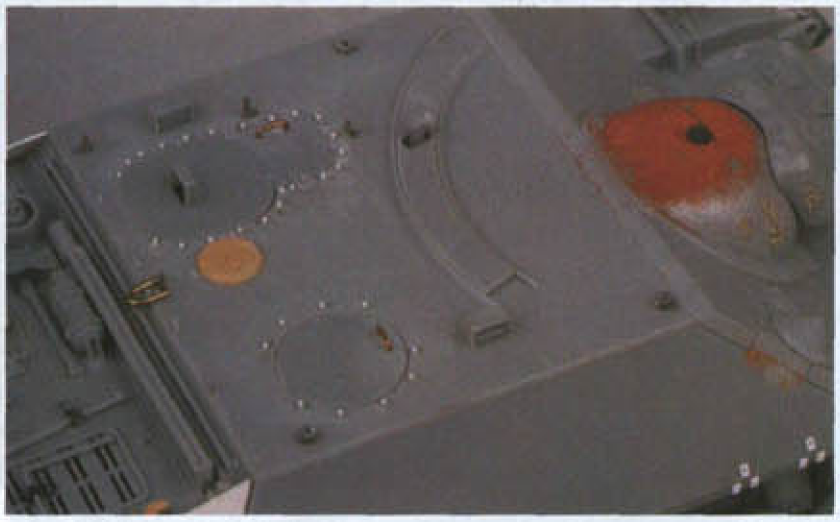
To the hull belly I added half round styrene strip to simulate weld seams where the bow armour and the stern plate are attached. Glue it in the seam and 'sculpt' the texture with a fine pointed bit on a Dremel motor tool. 'Paint' with liquid styrene cement to blend it in and texture a bit more if desired.

Casemate Roof

I added bolt detail around both casemate roof hatches with .020 sliced styrene hex-shaped rod and three *Pilze* sockets for the jib boom (or *Kran*) mounts with sliced styrene tube. I also added a *Nahverteidgungeswaffe* (close-in defence weapon) to the casemate roof from the Tamiya *PzKpfw IV* tool set. I first drilled a hole in the centre of the moulded-on blanking plate (correctly installed by DML to depict a vehicle without the weapon, due to production shortages) and then ground it off with a Dremel tool. After sanding the area smooth, I added the Tamiya part inserting its locating pin in the hole I'd drilled to place it correctly on the roof. I



These four views of the model after construction had been completed show the detail additions as either white, yellow, or green plastic, plus white metal tracks, brass gun tube, steel tow cables and nickel-plated photo-etched brass. Prior to painting, I removed the tracks, gun tube and mantlet, drive sprockets and idler wheels, plus the tow cable and jerrycans. Everything except the tracks were then washed in warm soapy water, rinsed off and placed in a sealed, dust-free container to dry. The tracks were cleaned with a steel wire wheel on a Dremel tool.



LEFT: The casemate roof had many small items added, aside from the Tamiya Nahverteidgungeswaffe close-in defence weapon. They are: styrene hex rod bolts around the hatches, styrene tube Pilze mounts for the Kran, and brass rod for the hatch grab handles, rangefinder mounting posts and casemate roof lifting hook.

added range finder mounting posts by drilling four holes where the drawings indicate and inserting pre-sized lengths of brass rod. I also drilled out the optical aperture for the gunner's *Sfl.Z.F.1a* periscope sight.

Front Plate and Gun Mount

Delete the spurious rib detail from around the rim of the main gun mount (part I-19) and add texture with Dremel tool. Then, fill in the circular detail on top of it and add the appropriate Eduard etch part. Ream the shaft that passes through the Topfblend (pot mantlet, part A-23) to accept the CMD brass replacement gun tube. Go slowly and check the fit since you won't want to remove too much plastic.

Add new texture to the *Topfblend* and also four holes for setscrews to top, bottom and sides at the 12, 3, 6 and 9 o'clock positions. I added the casting numbers to the inner and outer mantlet parts using the accessory items found in Academy's M10 GMC. These were carefully shaved off the sprue and glued on, followed by some blending in by 'painting' with liquid cement.

Now add the brass L/70 tube from CMD. Adapt the back of the gun tube to fit the kit mount by first adding a small piece of styrene tube to the breech end. Trim the rod that protrudes from the internal mantlet (part A-12) almost all the way back, but leave something for the styrene tube from the modified gun tube to grab on to. Next, assemble the kit gun tube (parts I-12 and I-13) and the mount (parts A-19 and A-20) as per the instructions. Cut off nearly all of the gun tube, leaving only the part that 'keys' into the rear of the internal mantlet (part A-12). Install this assembly as per the kit's instructions and after painting, attach the gun tube and mantlet combination. Because the brass gun tube is rather heavy, I kept it in the gun crutch, just to be on the safe side. While I was in the area, I added copper wire wrapped around the pivoting rod of the gun crutch to simulate the spring counterbalance.

The conical cover (part I-2) for the MG port can be left open. So, for a bit of character, I drilled out the area behind the port and added an MG42 from my spare parts box. Don't forget, of course, to drill out the MG42's muzzle if you are using a pre 'slide moulded' part.

Hull Rear

Add bolt detail to the flange that joins the upper and lower rear hull panels with.030 sliced plastic hex rod. You can either scratchbuild the later heavy duty tow coupling and add it to the lower rear plate or, as I did, drill a hole through the existing mount and add an 'L'-shaped retainer pin from styrene rod.

The Eduard etch set provides small retainer straps that attached the Flammvernichter (flame-dampening) exhaust stacks to the hull joining flange, which I added and detailed with .020 sliced plastic hex rod.

Fenders

Remove and replace the front mud flaps with parts from the Eduard etch set. I used leftover steel wire from the Fruilmodel tracks for the torsion bar springs and stretched plastic tube for the hinge sleeves. The rest is plastic strip with bolt detail from .020 sliced plastic hex rod. Remove and replace the rear mud flaps and mounts with parts from the Eduard etch set. Add bolt detail to the mud flaps with .020 sliced plastic hex rod.

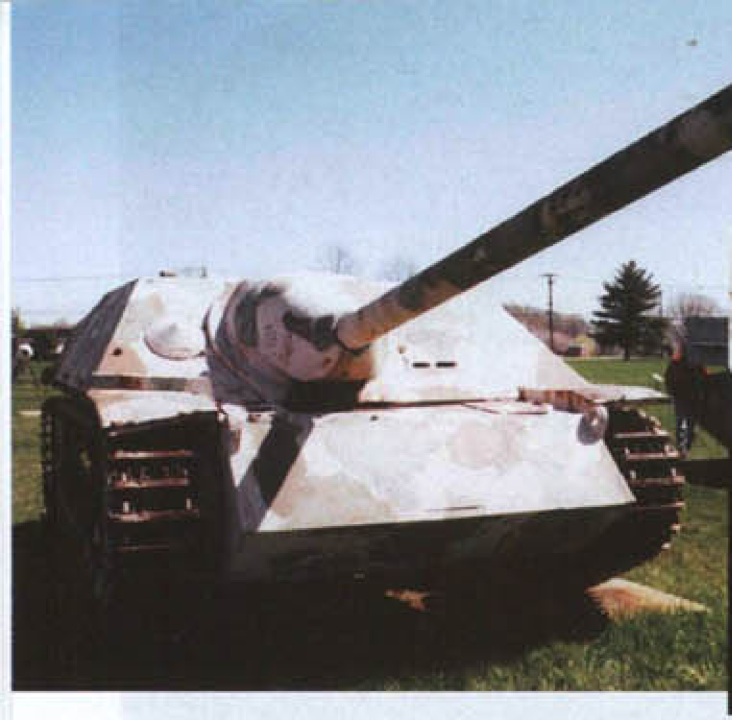
Tools and Accessories

The kit's jack is an especially nice six-part affair, which had Eduard etch mounting brackets added. Before you mount it, fill the mount holes on the engine deck with styrene scrap and super glue and sand smooth. Note the correct position by referring to the kit instructions or the reference drawings.

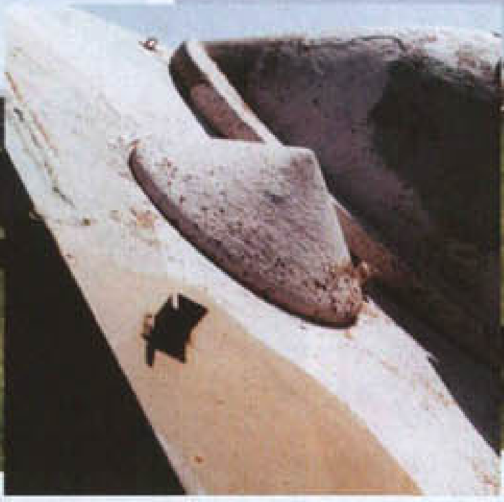
The jack block had its detail removed and wood grain texture scribed in with the tip of an X-Acto blade, and etched parts added. The remainder of the tools had etched brackets and clamps added as needed. I replaced the two wrenches and the two 'C'-hooks with Tamiya parts as the detail on the hooks was better. And, the wrenches and 'C'-hooks had no moulded on mounting bits that needed to be cleaned off. As the etch sets did not contain the proper style of clamps for the 'C'-hooks, I added these from styrene strip and rod. Where applicable, I added 'half' wing nuts from Model Kasten to the tool brackets. The gun cleaning rods were assembled and added. The track-joining tool (part C-17) is not used so do not open the holes on the underside of the front right fender.

Miscellaneous Details

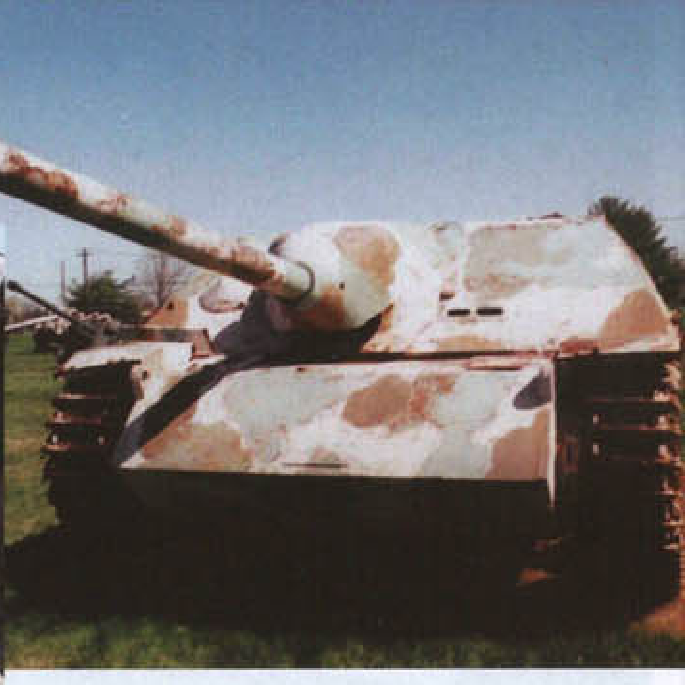
Replace rear side armour plates with styrene sheet, using the kit parts as a pattern, if you wish. There are also small brackets that attach the plates to the engine deck, which I added using styrene strip and .020 hex rod bolts. I then added mounting pads from .010 x .040 styrene strip to where the schürzen mounts would be, along the casemate sides and fender rims, using the ribs under the



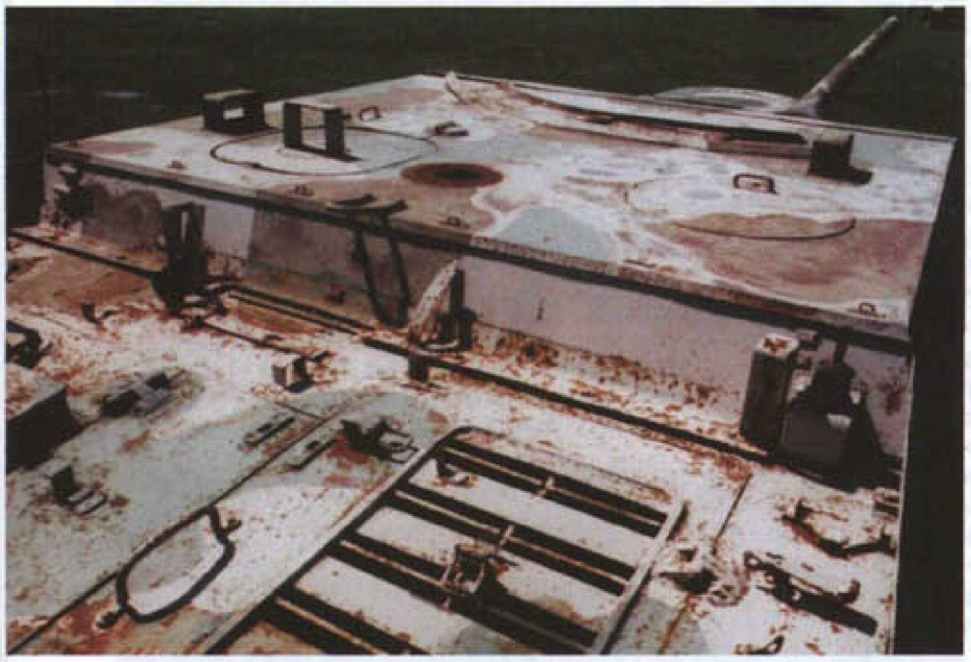
ABOVE: This front view emphasizes the low, sleek profile of the vehicle, while the wide angle camera lens makes the long L70 gun tube appear more prominent than it actually is.

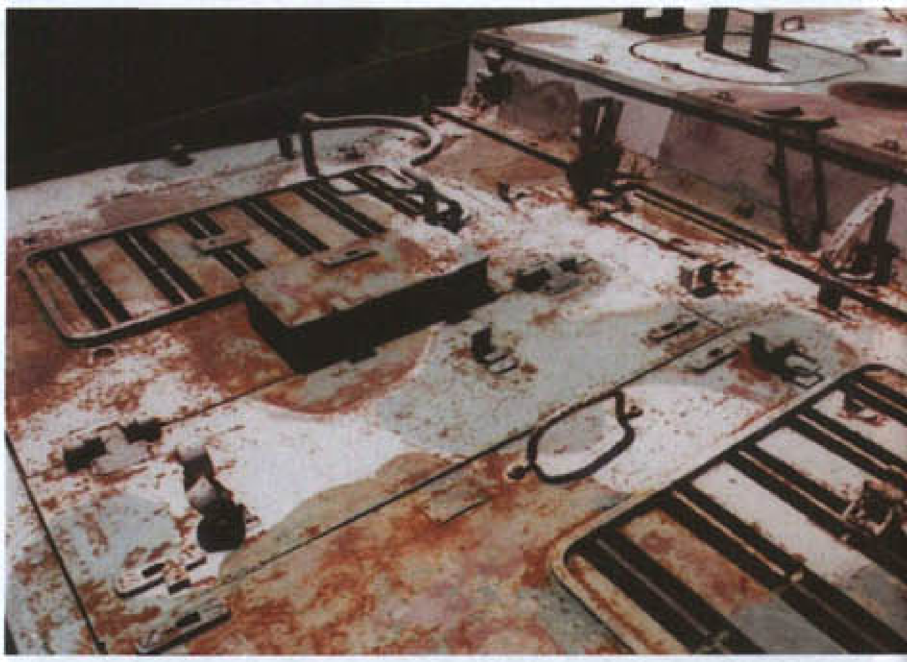


The cone-shaped plug for the MG port and its two inverted 'V'-shaped stops. Note also the small tie down just above the mantlet and the layers of chipped paint on the mantlet itself.

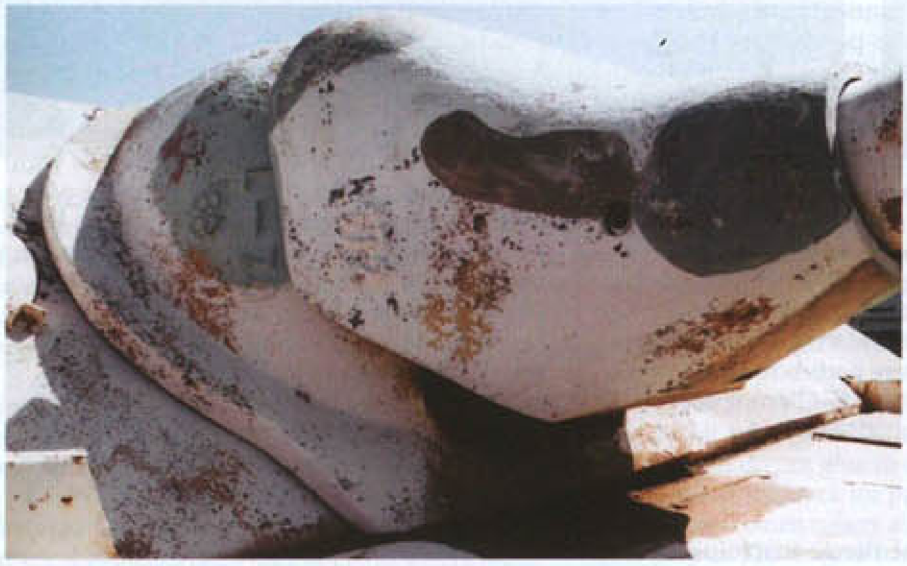


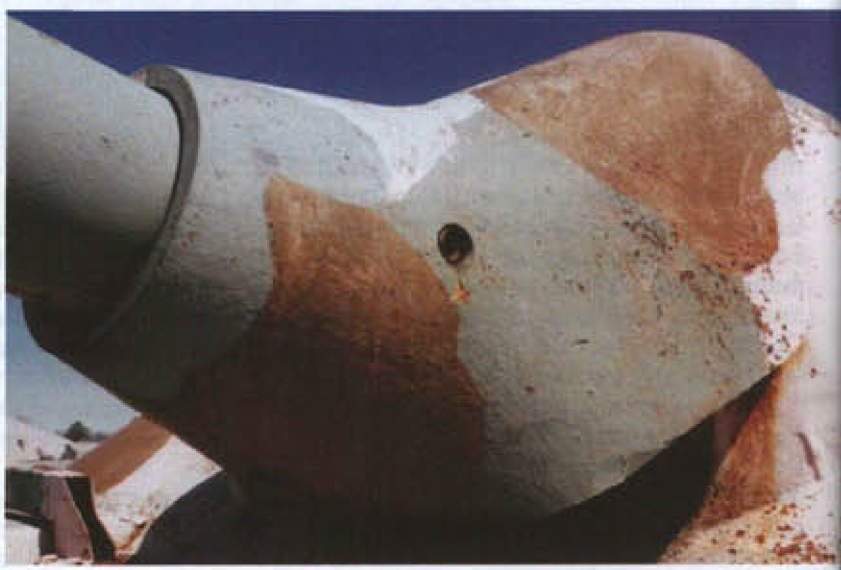
The angled glacis plates (upper: 80mm at 45 degrees; lower: 50mm at 55 degrees) and the casemate front (80mm at 50 degrees) made this vehicle a tough kill from the frontal arc. Note that the gun crutch is missing from this example at Aberdeen Proving Ground.

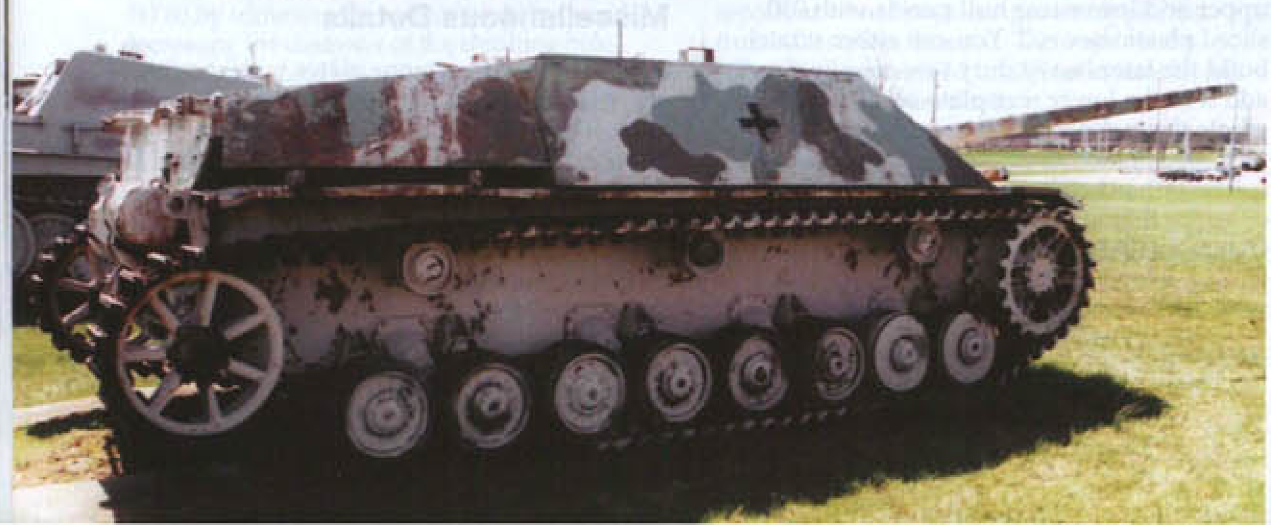




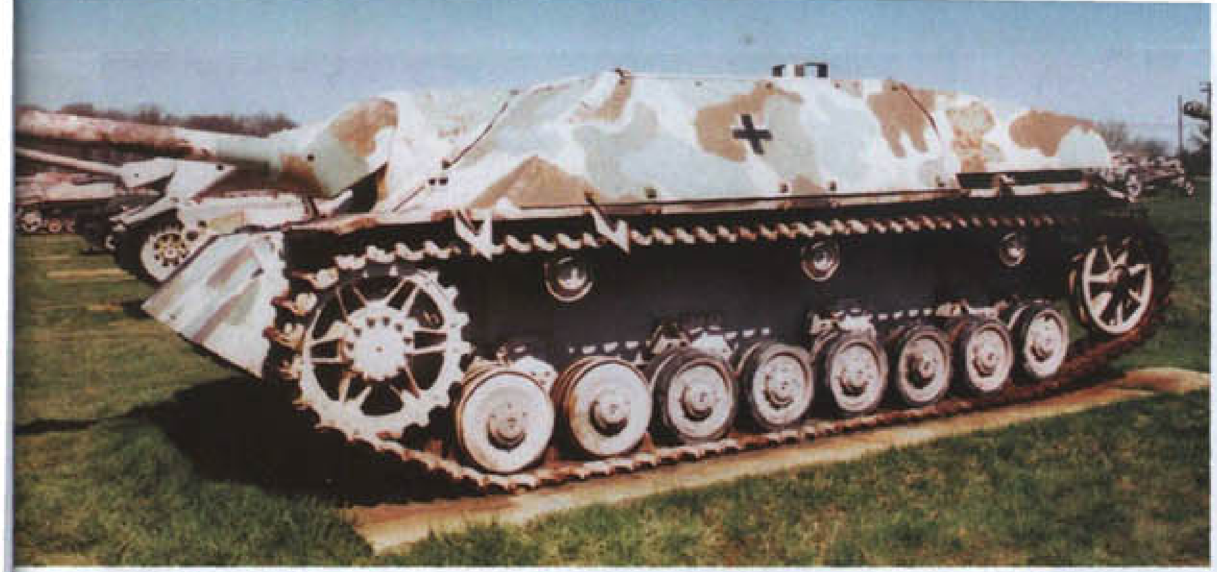
ABOVE LEFT: The casemate roof lacks features which I have added to my model, such as the jib crane base mounts (Pilze), rods to mount the range-finder and protruding bolt heads around the hatches. Unusually, neither the Nahverteidigungeswaffe (close-in defence weapon) nor its blanking plate is fitted; there is simply an open hole. ABOVE RIGHT: The rear deck was where most of the vehicle's tools were stored. Note the rectangular plate on the far engine vent, which is to mount a 'V'-shaped bracket to hold the two spare road wheels in place. One of the tubular wheel racks is missing, as is the plug (or mount) for the spot where a command vehicle Sternantenne (star antenna) would be mounted.



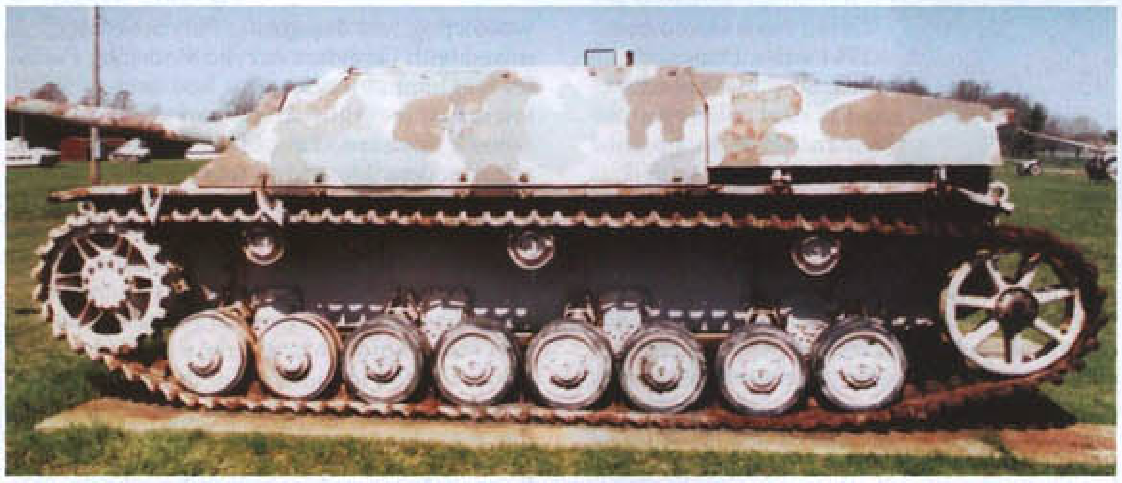




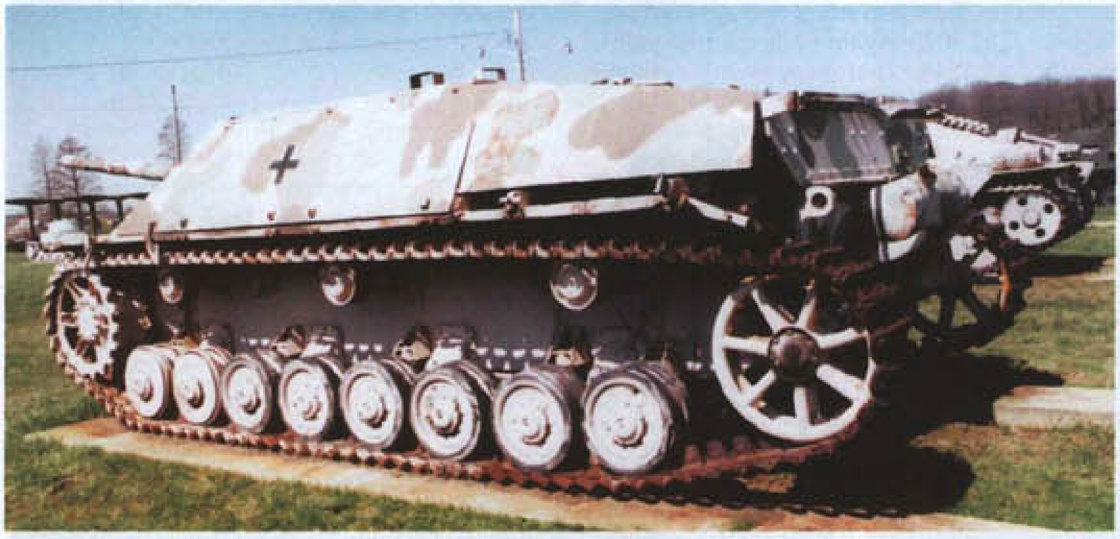
ABOVE RIGHT: A close up of the Topfblende cast mantlet showing two of the four setscrews in their depressions. They are at the 12, 3, 6 and 9 o'clock positions. ABOVE LEFT: The opposite side of the Topfblende showing the casting numbers, '172'. Note also the casting numbers on the inner mantlet, '68' and L-70. However, I don't know if the 'L-70' definitely relates to the type of gun used on the vehicle. LEFT: In this right side view, note the lack of fuel filler caps on the hull side. Suffice to say, the colours on this vehicle are completely fictitious.



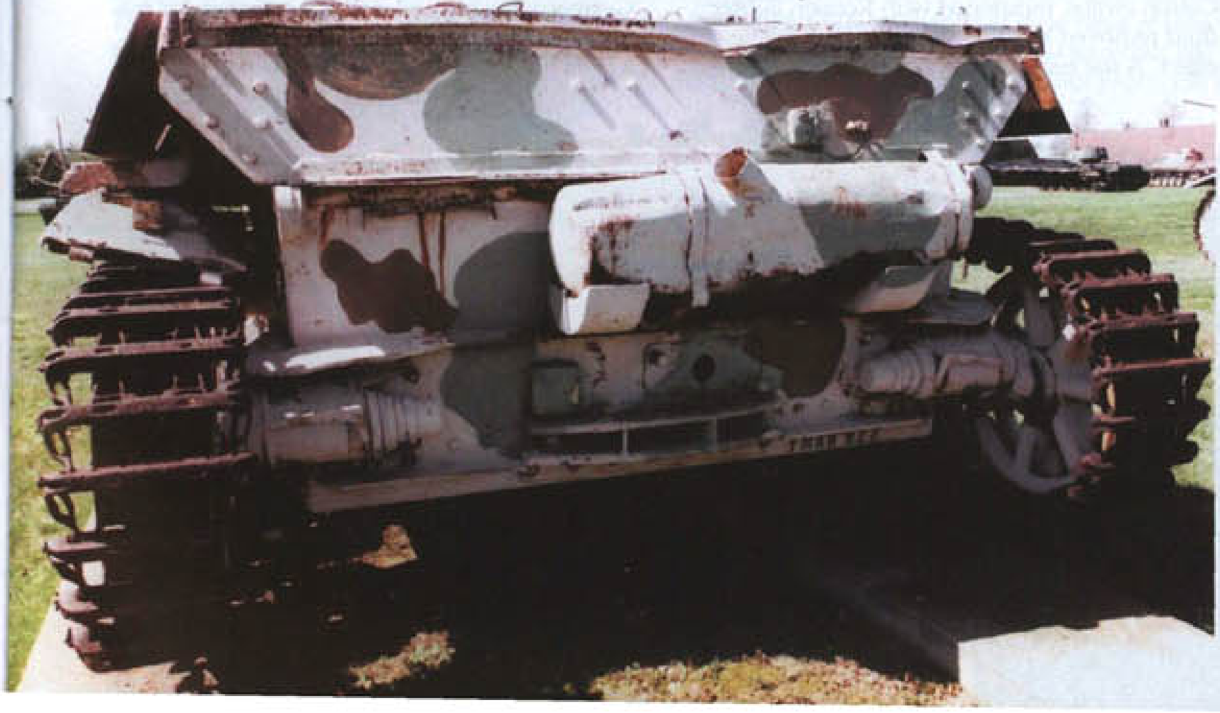
The configuration of the suspension system indicates this is a later production hull since there are three, rather than four return rollers. It also features a pair of steel-tired, rubber-cushioned road wheels on the front bogie station. Although not strictly a 'late' detail, the earlier welded idler wheel is not unusual on any later PzKpfw IV chassis and was, in fact, a feature reintroduced on late production Panzer IV/70 (V)s.

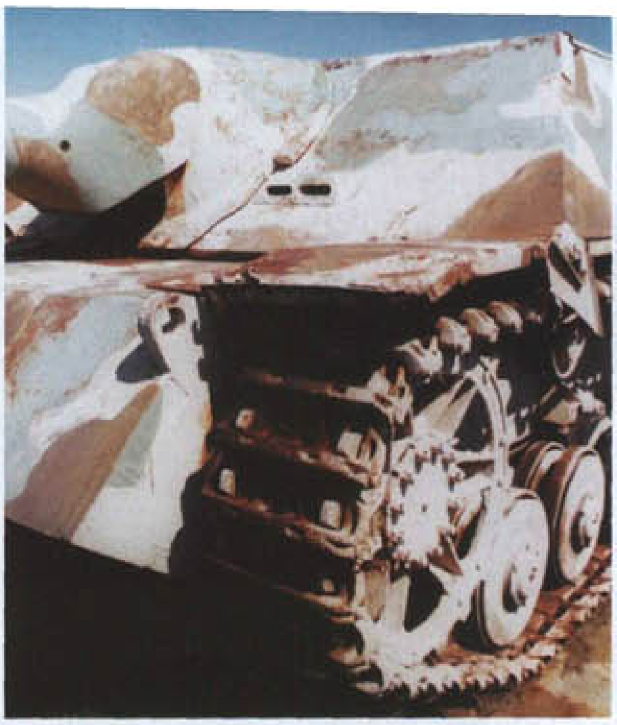


Note the bent schürzen mounts on the first two stations at the front, and the bolts in the positions of the remaining mounts. Barely visible under the top run of tracks, on the hull side, are the relocated fuel fuller caps.

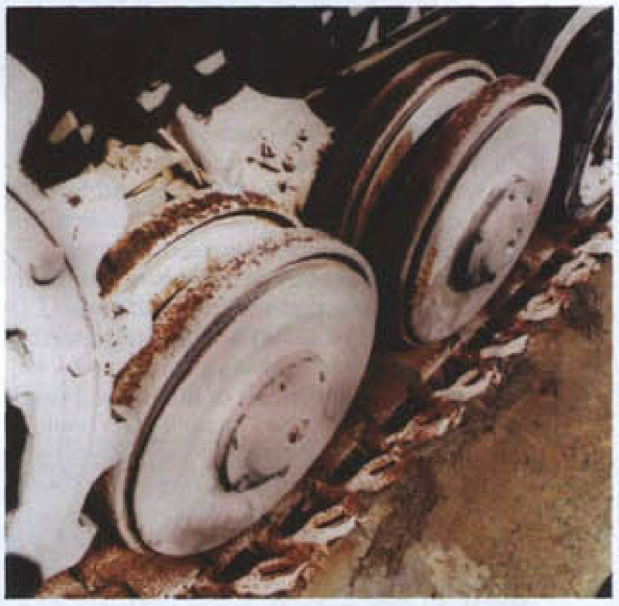


ABOVE: The two brackets located under the rear side armour panels are for storing the track-tensioning spanner. Also note (above the idler wheel) another late production feature of a PzKpfw IV chassis, the rear tow hooks as extensions of the side hull plates. BELOW: The hull rear has the earlier style muffler as used from the PzKpfw IV Ausf F chassis, onwards, unlike my model, which has the Flammvernichter (flame-dampening) exhaust pipes. Note also the twisted steel strip for spare track storage.

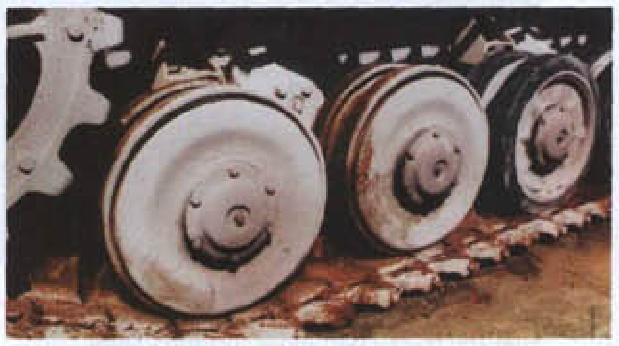




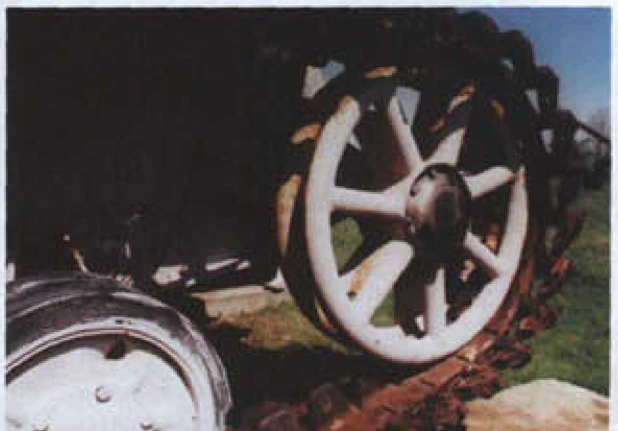
Note the driver's view port, the front tow hook and the slots on the face of the track shoes. The diagonal cleats have been worn off the face of the shoes.

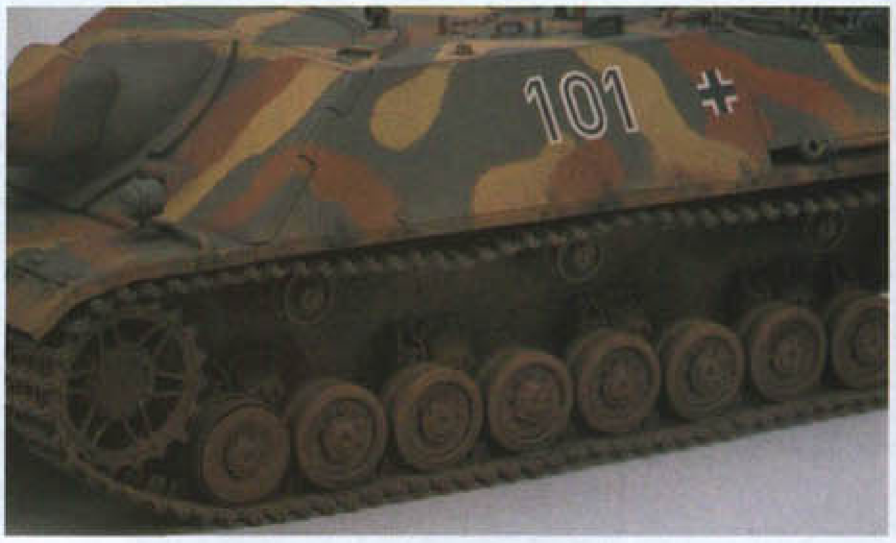


A view down into the steel-tyred, rubber-saving (Gummisparende Laufrollen) wheels reveals the rubber just behind the faceplate.



Another view of the steel road wheels showing the later hubs. These hubs were first widely seen on the PzKpfw IV Ausf H. BELOW: The welded tube idler wheel is not normally associated with a vehicle produced at the time this vehicle probably came off the assembly line. However, a field replacement or 'FILO' (first in, last out... It could have been at the bottom of a parts heap) could account for its use. Additionally, Jentz states that this feature was re-introduced in production at a later date. Note also the notches in the guide horns of the track shoes.





The Fruilmodel metal tracks are great for providing realistic sag, which is why I use them whenever I can, regardless of what the manufacturer provides in the box! The texture obtained with the Liquidtex acrylic modelling paste can also be seen here.

fenders as positioning guides. Then drill a tiny hole in the centre of each pad to represent where the bolt would go. Or, you could add the bolts with .020 hex rod.

Add a .015 diameter brass rod antenna, whose length is a scale two metres (just prior to painting). Note that the standard two-metre rod antenna is fitted where the *Sternantenne* would normally be. This arrangement is confirmed in the photo I used as a reference, from the Panzer Tracts book, as noted elsewhere in this article. As my particular vehicle appears to have used its spare road wheels, I put three Tamiya jerrycans in that rack. I used a pair of tow cable ends from the Tamiya tool set and wound steel wire from New Connection/Scratch Yard for the tow cable. This was wrapped around the wheel stowage racks.

Tracks

Temporarily attach the road wheels and idler wheel/axle combination with 'Fun Tack' (Blu Tack) and press fit the drive sprocket. Next, assemble and temporarily fit (for a size check) the Fruilmodel tracks. I used the later style tracks with notched guide horn and indentations next to the bars on the cleat face, type Kgs 61/400/120. Specs call for 99 links, but I used 100 per side. At this time, only glue the inner return rollers (parts R-2) so that the tracks will have support. Then, remove everything in preparation for painting. Add the outside return rollers (parts R-1) after the tracks are finally fitted.

At this point I had the entire model assembled, but with all road wheels, drive sprocket, idler wheels, outer return rollers and gun tube/mantlet combination left as separate parts to be added after painting and weathering had been completed.

Painting, Weathering and Final Assembly

Prepare the model for painting by washing everything except the Fruilmodel tracks in warm soapy water. Rinse all parts in cold water, place in a dust-free environment (I use a Tupperware box) and allow them to dry. My model depicts a vehicle that was produced from December 1944 when *Olivgrun RAL 6003* was specified as the base colour for German AFVs. So, I painted it overall in that colour with small areas of *Dunkelgelb RAL 7028* and *Rotbrun RAL 8017*, using Poly Scale acrylics. The reader should note that, at the time of writing, a certain pair of authoritative researchers still have not come forward with definitive, published information as to the exact visual composition of these colours, so strictly speaking my model is 'wrong'. Like many, I eagerly await 'the verdict' (in print, please!) from these gentlemen.

I began by painting the entire upper hull, front and rear in *Dunkelgelb RAL 7028*, lightened with white. After it cured for 24 hours, I applied Fun Tack as a mask and sprayed on *Rotbrun RAL 8017*. Again I allowed the paint to cure for 24 hours before applying a second group of Fun Tack mask, finally spraying on *Olivgrun RAL 6003*. About an hour later I carefully peeled the mask off. This is tricky since this stuff (not surprisingly, considering its name!) is very tacky. I managed to pull off a tool and one of the rear armour plates but I wisely avoided applying the mask to any etch bits since I knew this would probably happen. Some touch-up with a brush and the appropriate colour followed after I used super glue to re-attach those errant bits.

The model was then given a gloss coat, and decals applied depicting vehicle number 101 of *Heeres s.Pz.Jgr.Abt. 655* after it surrendered to Canadian forces in 1945, as per the photo on page 9-27 of *Panzer Tracts* Number 9. The decals are from Tamiya and were applied using the Super Scale system of setting and solvent solutions.

A second gloss coat was applied followed by a wash of Black Winsor & Newton Oil Paint thinned with Ronson cigarette lighter fluid. Cotton swabs, moistened with Ronson lighter fluid removed most of the wash for a subtle effect. A flat coat was applied and when dry, weathering was done using Poly Scale Mud, mixed with Liquidtex Acrylic Modelling Paste for a light mud texture. This was done to the lower hull (belly, front, rear and sides), road wheels, drive sprockets, idler wheels and return rollers. More Mud was then airbrushed on and earth tone pastels from Weber Costello blended everything together.

The Fruilmodel tracks were cleaned with a wire wheel on a Dremel motor tool, then they were dipped in a mixture of Floquil enamel rust and Floquil enamel grimy black, heavily diluted with Floquil Dio-Sol thinner. This is a very quick operation and aside from providing a good base colour for the tracks, the paint helps to keep any track pins from eventually sliding out. After drying, the tracks were then gently gone over with a Dremel and a steel wire wheel to simulate highlights caused by use. They were fitted and 'weathered in' to the rest of the vehicle.

As you may surmise, I enjoyed the project and would not hesitate to recommend it to the average modeller. Probably the most daunting aspect of the entire exercise is getting hold of the actual kit, which seems to be rather hard to come by these days. For procuring the kit, thanks must go to Gene Bagnoli of S&J Hobbies, Ebagnoli@aol.com from Staten Island, New York, USA. I'd also like to thank AMPS members Mike Salzano and Mike Luisi for their moral support and encouragement.

Finally, thanks are also in order to CMD's Bill Miley www.cheaspeakemodels.com as well as Eduard's Karel Pader and Colin Adair (who is no longer with Eduard) www.eduard.cz for their support in providing some of the items used in this project.

References and Commentary

First and foremost, I'd like to extend my sincere gratitude to Mr Martin Block of Germany for his generous permission for me to use information on the composition of *s.H.Pz.Jgr.Abt. 655*, which he has painstakingly derived by his constant searches through

official documents. Any errors in interpretation are mine alone.

1. *The Rhineland 1945: The Last Killing Ground in the West*, by K. Ford. Osprey Campaign 74. A concise and entertaining read centred on the final battles in Northern Germany, which began in February of 1945. ('655 was involved in these actions). The book also contains orders of battle information, which I used to flesh out the details of the campaign described in the section entitled 'The Model in Historic Context'.

2. *Panzer Tracts. No. 9. Jagdpanzer (Jagdpanzer 38 to Jagdtiger)*, by T. Jentz and H. Doyle, 1997, Darlington Productions. By far THE book on the subject, the line drawings are the most reliable and up-to-date available in print today. In addition, the authors have gone to great lengths to explain production modifications and when they were introduced, which is of extraordinary help when modelling a vehicle at a given location in space and time. This was my main reference for this project and should be considered indispensable.

3. *Panzers at Saumur. No. 1*, by H. Ichimura. 1989, Pai Nihon Kaiga. Although superseded by the *Panzer Tracts* book, this is still quite useful, especially for the detail sketches, which cover this version. However, the photos all describe the incorrectly named *Zwischenlösung* (interim solution) *Panzer IV/70 (A)*. Although a different vehicle, the photos show many small details (notably of the roof and mantlet) that are the same as those on the *Panzer IV/70 (V)*.

4. *Jagdpanzer IV L/48, Photo Sniper No. 6*, by K. Mucha & G. Parada, 2001, Kagero. This has some very finely produced CAD drawings of tools and fittings common to the L/48 and L/70-armed versions, which I used as references to detail certain items.

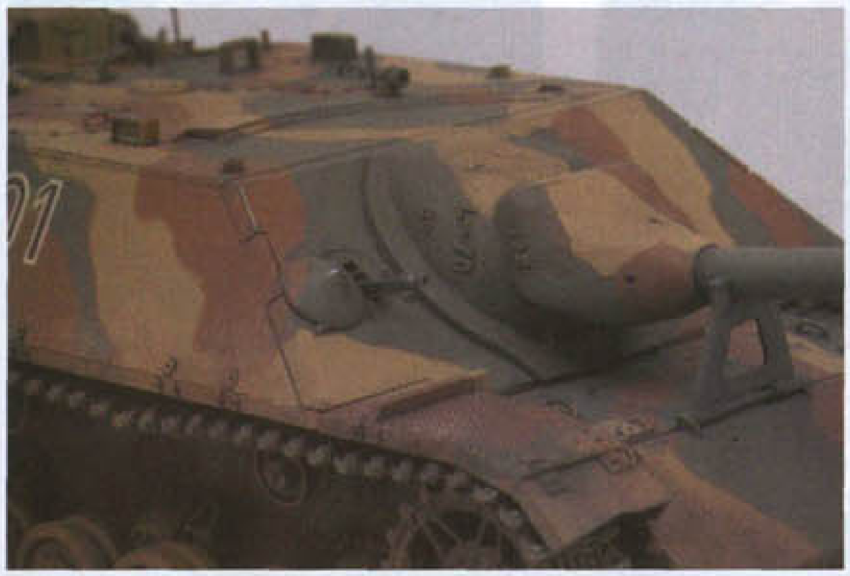
5. *An Encyclopedia of Battles*, by D. Eggenberger. Dover Publications, 1985. A handy book for those interested in the historic context in which their models may have existed. The historic notes I have included were taken from this volume, combined with some information from the various references listed, and totally re-written. Of course, the credit for the basic research must go to the all of the authors listed. Any errors in interpretation are mine alone.

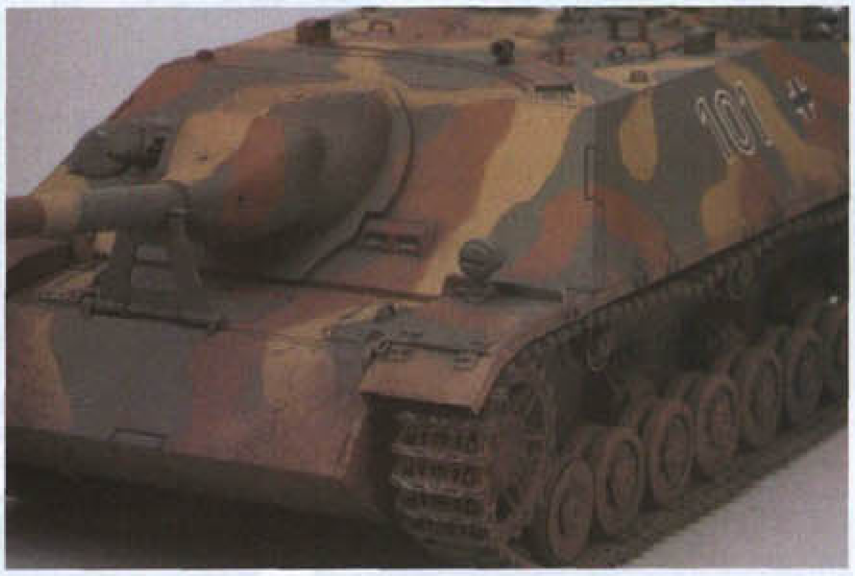
6. AFV Interiors web site www.afvinteriors.hobbyvista.com This has a fine set of photos of a restored vehicle consisting mostly of interiors. There are also a couple of archival photos. Note that this is the new address of this fine site, which was nearly lost to us.

7. Missing Links website www.missing-lynx.com .A discussion took place on 15th October, 2001 regarding the *Panzer IV/70* and the unit it was attached to. There were photos posted (no longer accessible) and a brief bit on the organization of the unit at the time of its surrender to Canadian forces.

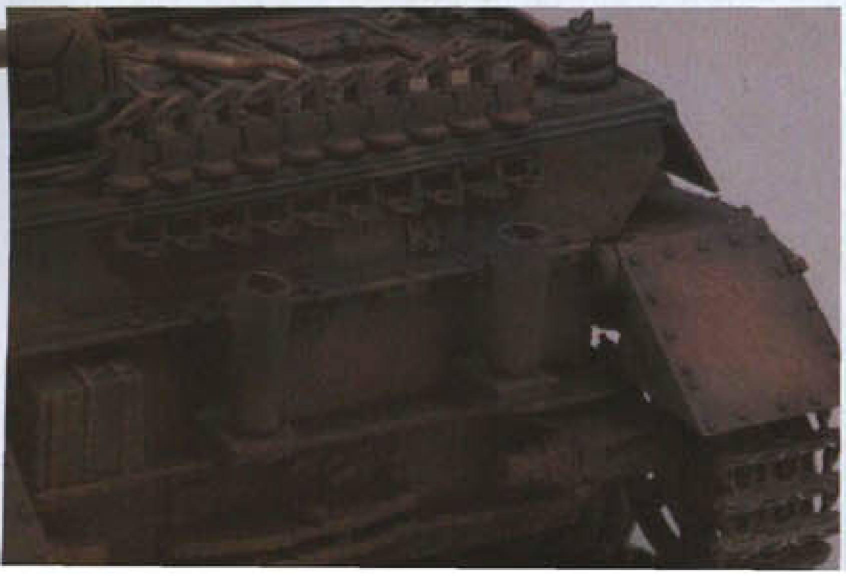
Further Reading

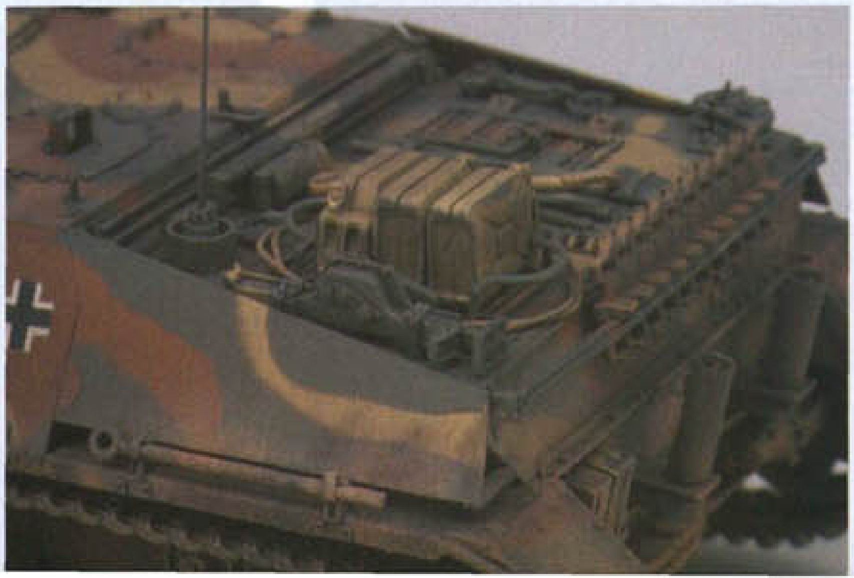
Additional inspiration for modellers can be found in the following books:
Arms & Armour Press's, *Tanks Illustrated No. 9, Last of the Panzers*, by W. Auerbach.
Osprey's Elite No. 11, *Ardennes 1944: Peiper and Skorzeny*, by J.P. Pallud.
Osprey New Vanguard No. 34, *Sturmartillerie & Panzerjäger 1939-1945*, by B. Perrett.
Concord Armor at War No. 7046, *US Tank Battles in Germany 1944-1945*, by Steven J. Zaloga.
Further vehicle details were obtained by personal inspection and observation of a *Panzer IV/70 (V)* at the Ordnance Museum at Aberdeen Proving Grounds, Maryland, USA.
See accompanying photographs. ■





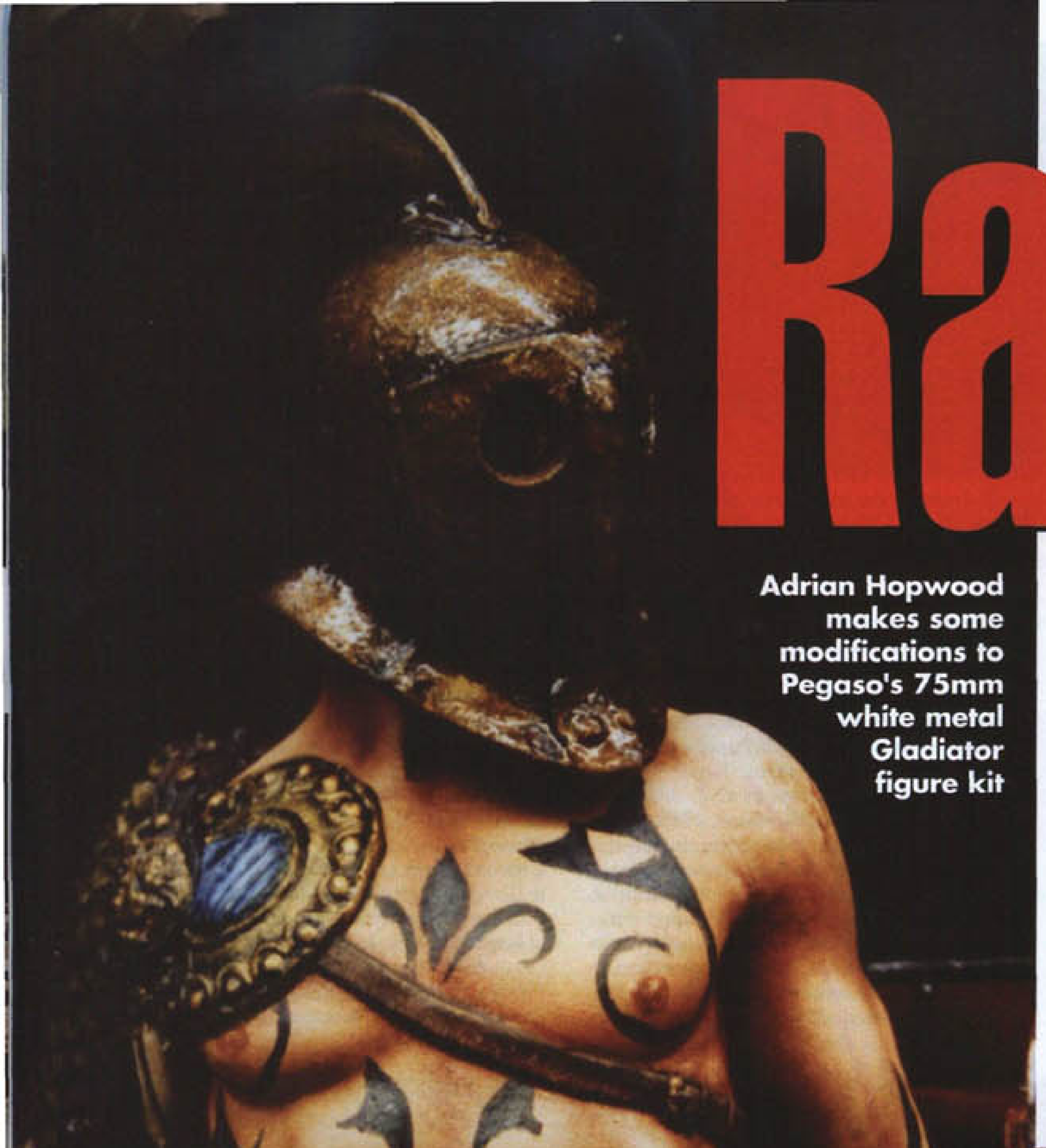
ABOVE LEFT: For a bit of character, I left the MG42 gun port open and added a suitable gun from the spares box. Note also the slightly bent mud flap, which is easily done with etched brass as a medium. I had to fix the gun tube to the travel crutch due to the excessive weight of the brass gun tube. That's why aluminium is a better medium for this type of accessory, and the reason CMD now uses it! ABOVE RIGHT: For the camouflage scheme, I tried to duplicate a late-war, factory-applied pattern with relatively hard edges. To do this I used Fun Tack (Blu Tack in the UK) as a masking material. It must be used with some care since this material's tackiness can pull off small parts, which it did in a couple of instances during this project. BELOW LEFT: A combination of Poly Scale acrylic paint, Liquidtex acrylic modelling paste, a wash of Winsor & Newton oils and Weber Costello pastels were used to dirty up the lower parts of the model. This rear view shows the effect to good advantage. BELOW RIGHT: The rear decks of these types of vehicles are perfect places to store various accessories. This allows me to 'personalize' a model, which is why I like to model AFVs. I used Tamiya jerrycans and placed them in the spare wheel rack, which I reasoned was vacated due to the odd wheel arrangement of the front bogie unit, as seen in my reference photo. The photo also showed a tow cable in that general area, so I added the New Connections steel cable with ends from the Tamiya German tool set.

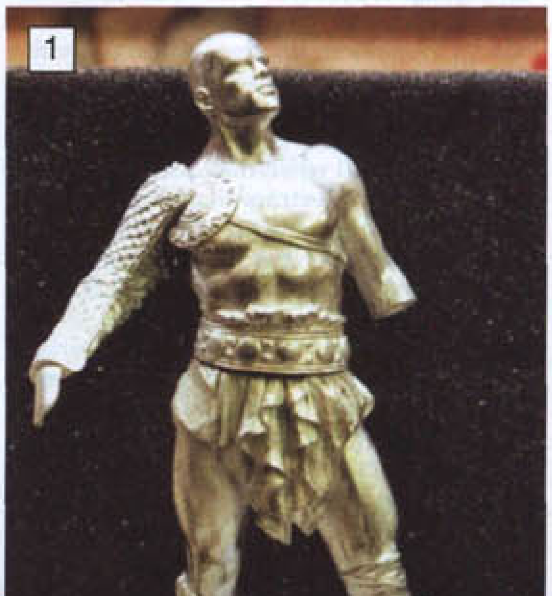


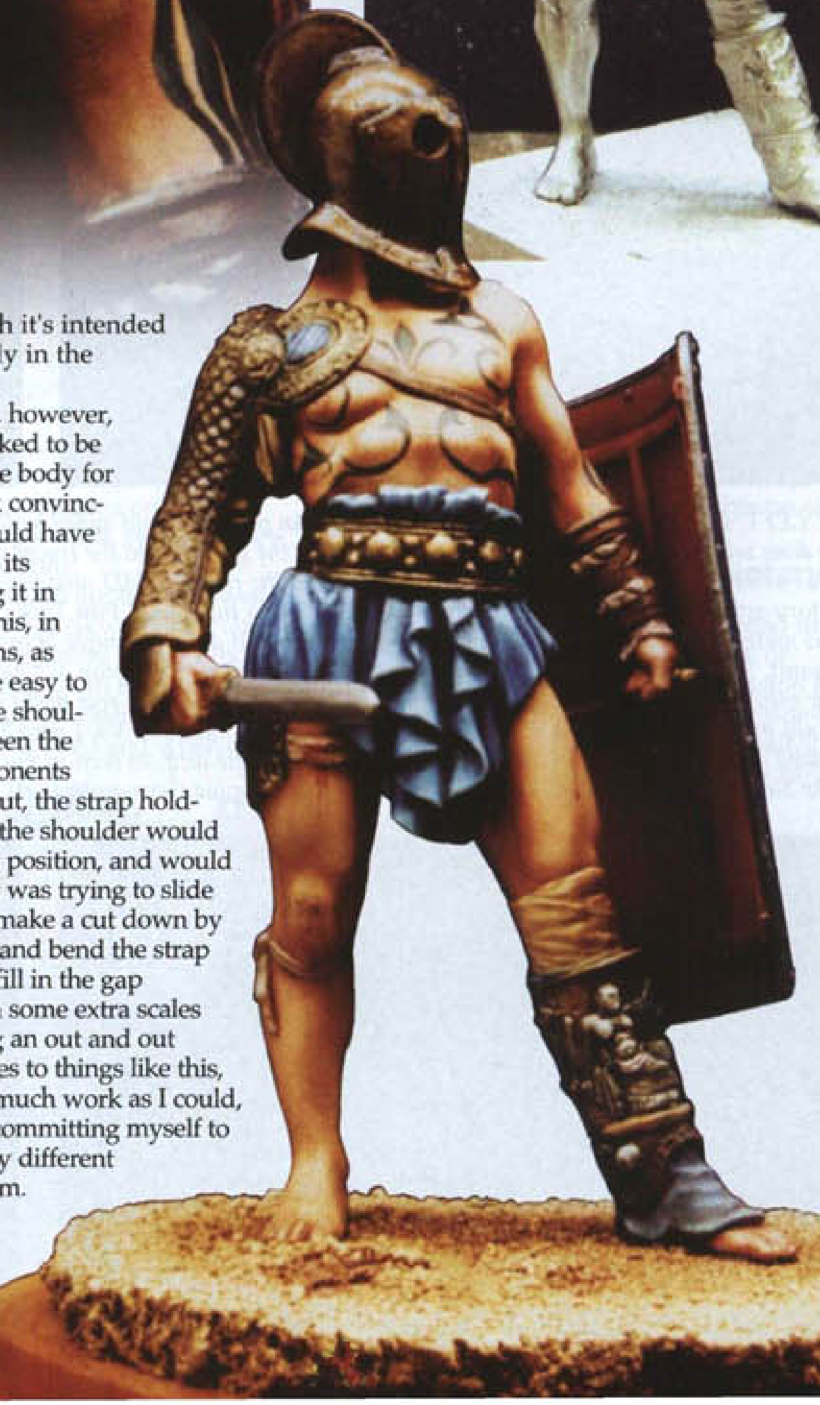


Rage!

Adrian Hopwood makes some modifications to Pegaso's 75mm white metal Gladiator figure kit





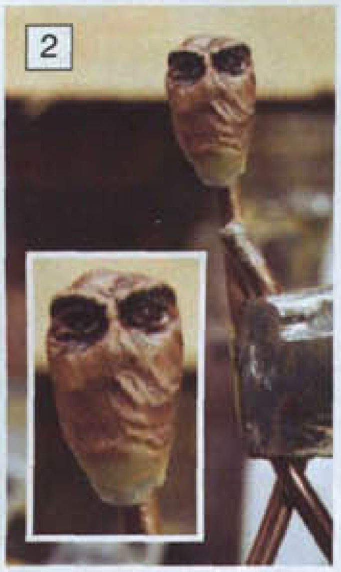


I wrote an article a while back about 'the Gladiators', just covering a few of the 54mm offerings. Since then there's been several more gladiator figures from Pegaso alone, but as I'd done a bit of work on this particular model, I thought that he deserved an article all of his own.

I gave the model the name of a character from a fictional novel by a guy called David Gemmell, although who is to say that a gladiator with this name didn't exist? The original model, when released by Pegaso, drew my eye, and I made a point of buying one from them at Euro 2005. It wasn't until I started looking at the parts however, that the idea of removing the head and using the helmet occurred to me. The idea was simple enough, but it would throw up a few problems. Not least was what the right hand and arm would now be doing; and dependant upon the choice made there, how would the anatomy be altered? Also, those eye-holes are a bit large to have nothing at all behind them; what could I do to remedy that?

I began, as usual, by cleaning the model up, removing the mould part lines, and thinking what I could have the right hand doing. The main components are shown in **Photo 1** at this stage and the only thing I could come up with, was having the model hold the sword, which fortunately is a full casting, even though it's intended to be buried partially in the groundwork.

The problem here, however, was that the arm looked to be too far away from the body for the pose to now look convincing, and so there would have to be an alteration of its position, dropping it in towards the body. This, in turn, caused problems, as although it would be easy to add some flesh to the shoulder, if the joint between the arm and body components was simply angled out, the strap holding the armour over the shoulder would then be in the wrong position, and would look as if the armour was trying to slide off. I would have to make a cut down by the side of the strap, and bend the strap away from the arm, fill in the gap caused, and sculpt in some extra scales on the armour. Being an out and out coward when it comes to things like this, I began by doing as much work as I could, without necessarily committing myself to having the model any different from its intended form.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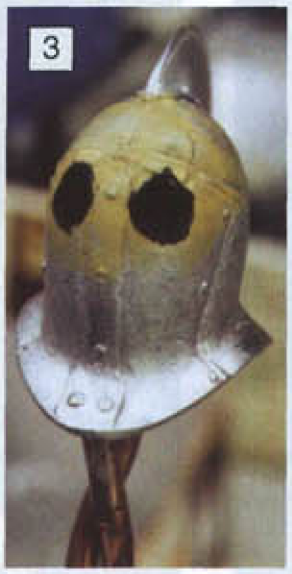
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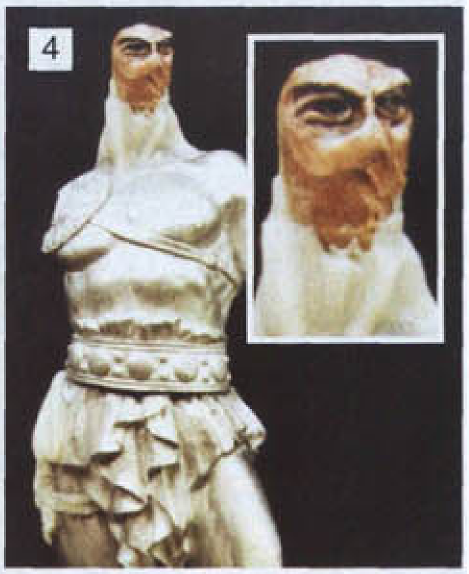
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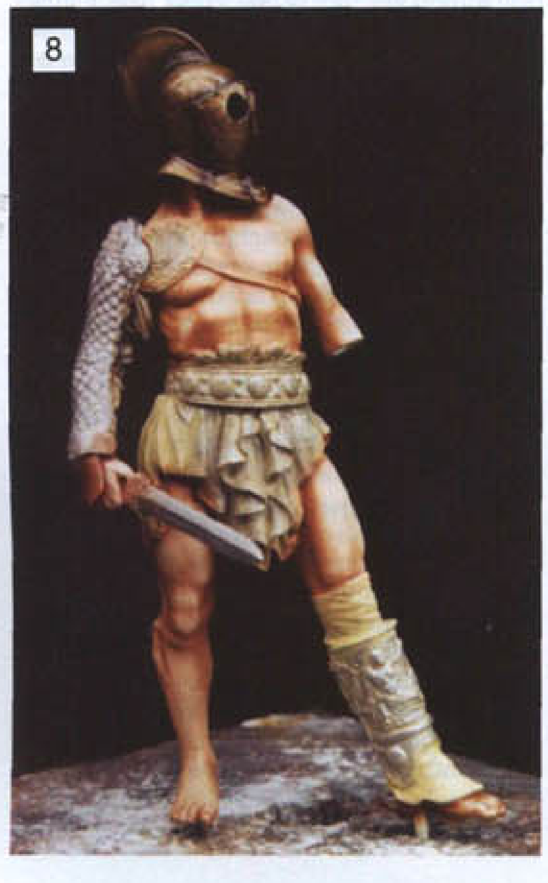
I drilled out the helmet with as large a drill bit as I dared use. Even then some cracks formed in the front of the helmet, although these were easily patched up with a little filler.

'Eyes on a stick'

I sculpted what is virtually a pair of eyes on a stick! (**Photo 2.**) This would be all that was visible through the eyeholes anyway, and I made the eyes and the bridge of the nose, testing this inside the helmet a couple of times to see if it looked convincing. **Photo 3** shows these being test fitted, although I'm not convinced that you get the effect I was after from this picture.

Now for the bit where I committed myself: I took a saw to the area next to the strap on the arm, sawing down to the circular decoration that would protect the armpit. I levered the cut wider using a small screwdriver, testing the fit and 'hang' of the arm on the figure until I was happy with the positioning. I'd still need to add some filler under the arm, to form of some of the linen padding that would be underneath the armour.

I removed the fingers from the hand, and glued the sword in place, because I wanted to represent a relaxed grip, that would allow the sword tip to be dipped. I then added Magic Sculpt to the sword grip so that I could sculpt in the fingers gripping the sword.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The last thing I did was to remove the head. Initially I'd entertained the idea of drilling out the helmet enough so that I could trim the ears and possibly some material off the sides of the head so that I could use the one that's supplied with the model. But having seen the size of the hole that it was possible to drill into the helmet, I'd have to trim a large amount of the head away, and it would be simpler to take the route that I chose. Not only that, it's a good item to have in the spares box, so there was no real loss.

The last alteration was to add the 'eyes on a stick' to the body, setting these at the correct height for the helmet to sit at, and then re-sculpt some of the neck so that there was something to support the bottom rim of the helmet. **(Photo 4.)**

I did paint the eyes first, before adding them to the body, simply because it was easier to do than having them attached to the model.

Photos 5 and **6** show the model from different angles at this stage, and the other additions of putty can be seen. Material has been added to the loincloth to cover the blank area where the helmet would have been held against the hip, a bandage has also been added to the right leg, and a pair of ends sculpted for the ties on the lower left leg.

Photo 7 shows a close up of the helmet covering the 'eyes on a stick'. With the benefit of good light and a means to turn the model back and forth, the trouble taken to drill out the helmet and add the sculpted eyes and bridge of the nose can be seen quite easily. However, this photo is about the best I could obtain (and I took a lot of pictures to get this much of the eyes to show), but I don't think that the effect I wanted has transferred to the medium of film all that well.

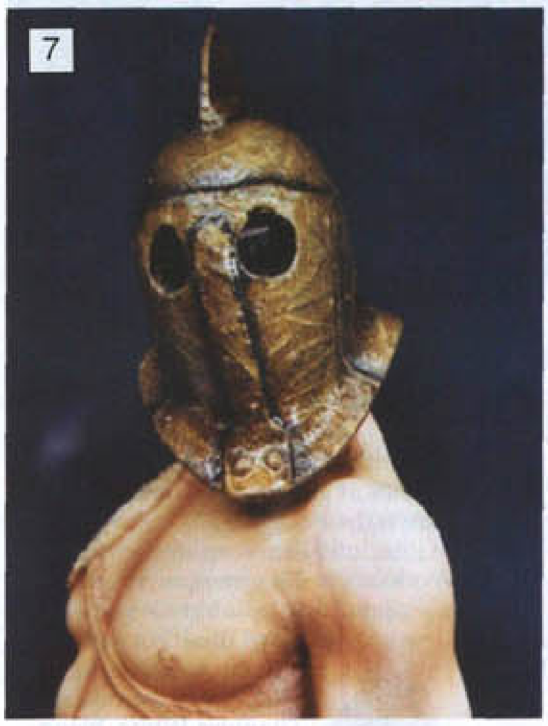
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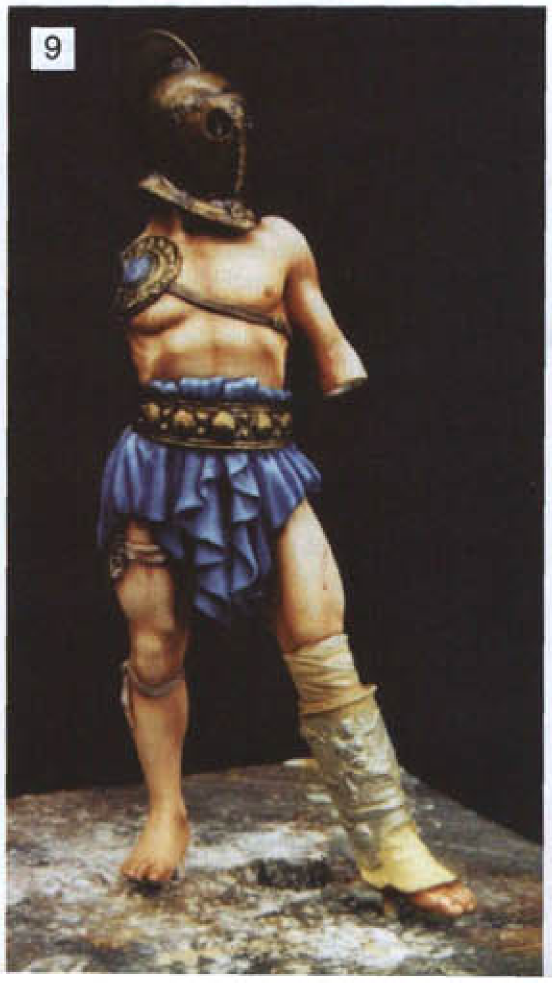
Photo 8 shows the model temporarily assembled so that I could gauge whether the sculpted areas looked OK. He still looks a little odd without the left arm and shield, but the addition of these parts will come soon. **Photos 9** and **10** show a front and rear view of the model about half way to completion, with the loincloth, skin and some of the metalwork painted.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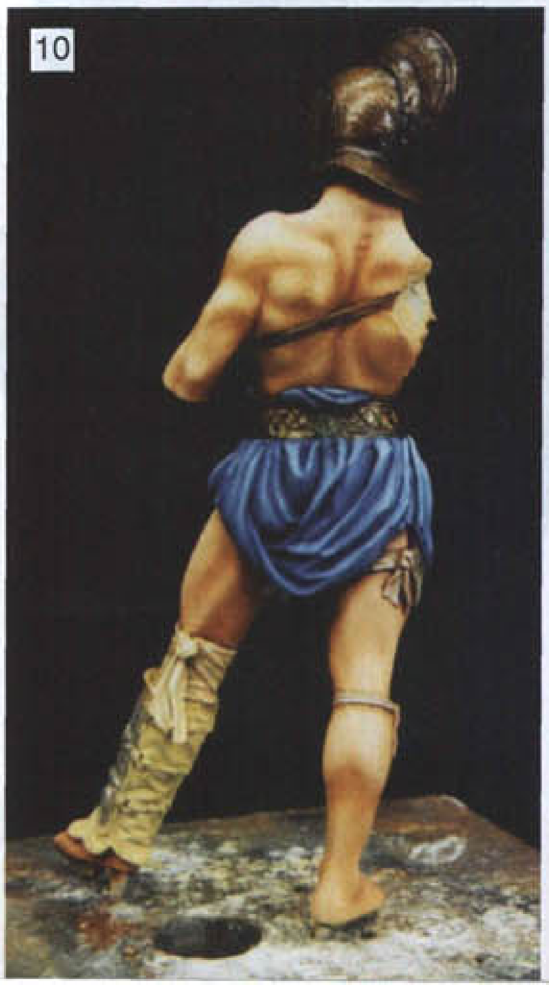
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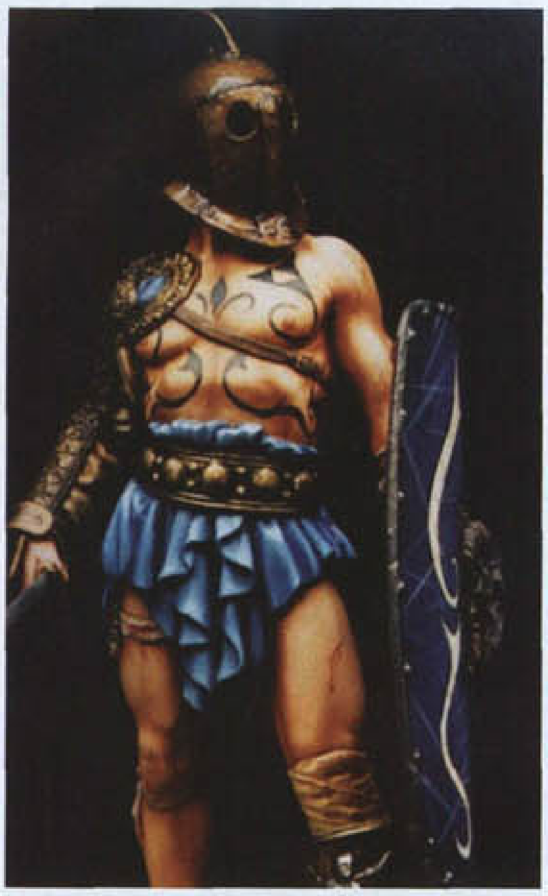
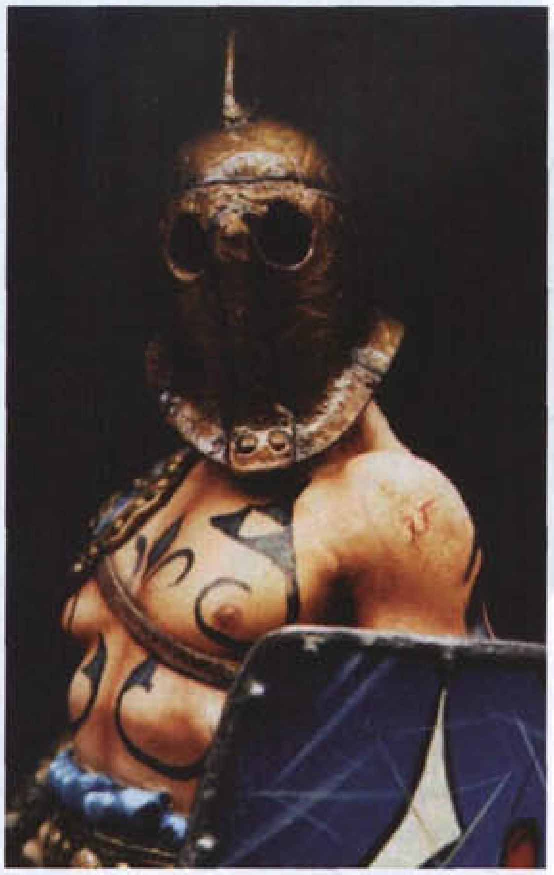
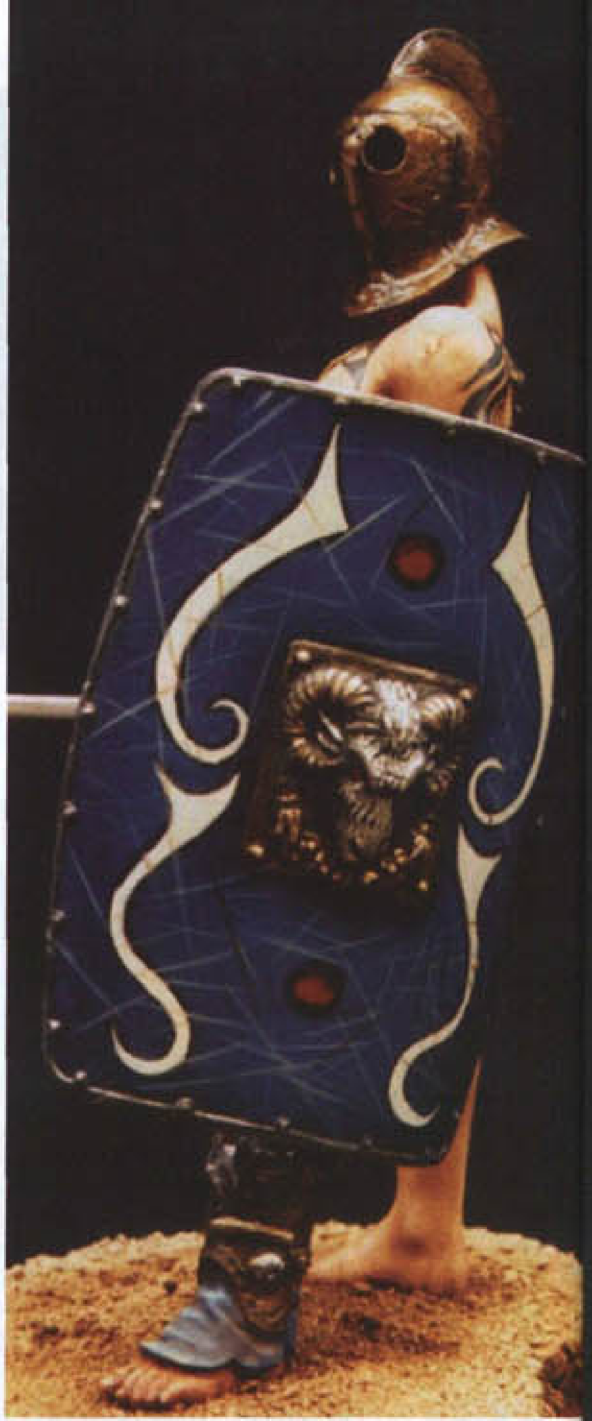






Applying the paint

I used my normal method of oil colours over an acrylic base for the skin areas, adding a little Liquin to the mix so that a slight gloss finish resulted. This, I thought, would look like sweat at this scale, and I would later add some fine lines of gloss varnish where sweat has run down the body.

For the loincloth, I used an undercoat of Games Workshop's 'Moody Blue' acrylics, and then painted over this with Prussian Blue. For mid-tones and highlights I added varying amounts of Titanium White, blending these together with a fine brush.

I decided to depict the metal areas of the helmet, belt and leg armour as mainly bronze, and for this used a green undercoat (GW Forest Green) and over this used Winsor & Newton Bronze oil colour. I mixed this with some Liquin and also some Mars Black for the shadows, and then added Winsor & Newton Gold to build up the highlights. Some small amounts of Winsor & Newton Silver Ink (I know, it's water based, but it still goes over the dry oils) to add a few extreme highlights to the metal.

The bandages and other cloth wraps on the legs have been rendered in various shades of pale brown/yellow. I meant for these to look like random pieces of cloth used to pad out the armour, or as bandages, and that they would probably be slightly less than clean. I used Orc Brown and Skull White with a little Bestial Brown (all GW acrylic colours - how did you guess?) to build up a mid-tone, that I could then add more of the Bestial Brown to for building up shadows, and then add highlights with more of the Skull White.

I've used blue as the 'theme' to my growing army of painted gladiators (well the recent works at least) I thought that I'd continue with this, and painted the loincloth and the padding on the left leg with blue oil colours.

The loincloth in particular is fun to paint, mainly because of all those wrinkles and folds. The highlighting and shadows took quite a while to add, and I found it easiest to paint on the darkest colour oils (Prussian Blue with some Turquoise and Titanium White mixed in), and then add more Turquoise and Titanium White to the mix for the mid-tones. Once these were built up, highlights could be added with more of the white, blending this into the previously applied colours, which were still wet.

The detailed embossing on the leg armour was painted with some GW Chain mail acrylic, and then some shadows from Mars Black oil paint added in. Final highlights using Winsor & Newton's Silver Ink were added only after the oil paint had fully dried.

I detailed the sword; thinking back to the style of weapon used in the Gladiator film, and added a wood grain effect to the tiny area of pommel and guard. It's barely discernable on the model, and unless the pictures get 'blown up'; I seriously doubt that most people would even notice.

The sword blade was painted with the same mix of paints as the silver details on the leg armour, and I tried to emphasize the shadows on the underside of the blade in the hope that the upper highlights are made to stand out more due to the contrast.

All stuck up

At this point - with the figure almost finished, I decided to start adding the glue. A couple of touches of super glue to add the left forearm and hand, a couple more spots to fix the helmet in place (go on, admit it, you can see it coming.) Um, that nicely painted little set of eyes! The super glue frosted the areas of skin inside the helmet, and the 'Law of Sod' being truly in full flow, I couldn't get the helmet off to remedy the problem. I know, I should have thought about the possibility, and used wood glue to hold the helmet on the figure, but I didn't.

So, to make good the mistake, I had to paint the eyes and skin tones again on the area inside the helmet, using a fine brush and only the space available through those two (what I'd thought were initially massive) eyeholes.

I've no need to tell you how small they'd shrunk when I was trying to do this; they seemed ludicrously tiny. However, I did manage to get a decent finish on them again, and dare say that it's better than the initial paint job, daft as that might seem.

Interim groundwork

Under normal circumstances I leave the groundwork until last, but in this case, I didn't want to mess about with the figure after the shield had been put in place ...So I made the groundwork at this stage.

After selecting a plinth, positioning the model roughly where it was going to be on that plinth and then drilling location holes for the wire pins, I could begin making a small area of the arena floor.

It's a relatively simple affair, and done so that it matches in with the other gladiators that I have in my collection. I simply mixed up some Milliput, and added this to a decorative wood plinth from Armstrong Bases of Peterlee.

By gently teasing away the edges of the putty with a scalpel so that the Milliput tore away in a ragged fashion, a random effect was left on the edge of the groundwork. I added some sand to the top, pressing this into place, and then painted over some thinned wood glue, as a 1:1 mix with water, so that the sand would stay put after the Milliput had dried.

So that there was a positive location for the model to sit into, the figure's feet were pressed into the soft putty so that their soles were just below the level of the sand. The figure was then removed.

Once fully dry, the groundwork was painted with a thinned application of Mars Brown oil paint, adding to this some Mars Yellow and then Titanium White to build up the highlights. Shadows around where the feet would be were added to the groundwork once the model was glued in place, as too was a dusting of pastel chalks to add to the dry look of the sand.

Now for the shield

I wanted the figure to represent a Celt, and so I carried the blue theme over onto the shield, but added some vaguely Celtic designs with black bordering to off-white shapes. Although I tried to make the shield look interesting with these, and with shadows and highlights on the blue areas, it was that massive a space, that it still looked rather empty.

After painting the shield boss with the same bronze and silver shades of colour used on the leg armour, I then added damage to the shield with lots of very thin lines of off-white oil paint. I wanted to make the shield look battered, but not heavily damaged, as though there hadn't been enough time for his opponent to get a good strike in on the shield, let alone to him.

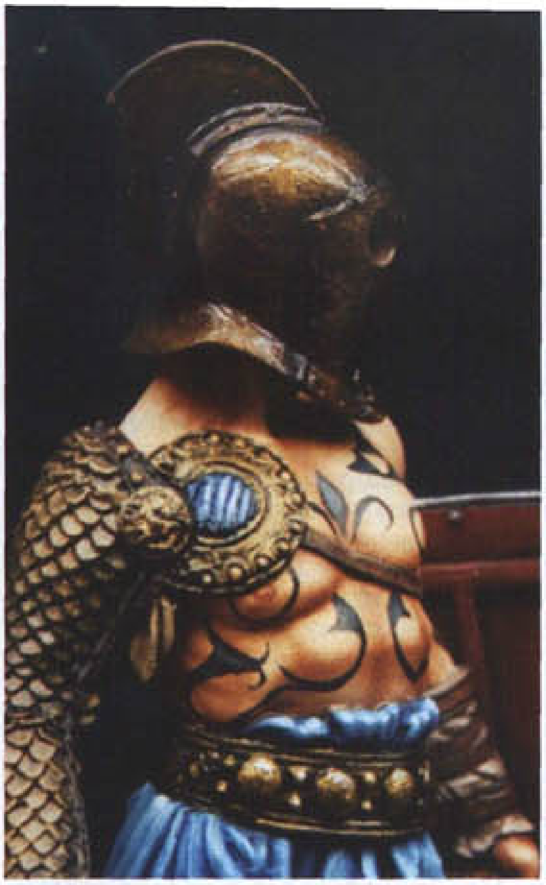
The back of the shield was painted with a dark red/brown, as this is quite a prominent area, I thought that it might lift the monotony of the blue, without losing the idea of matching clothing. While the shield was drying, I returned to the figure to paint the leather areas of the belts, which were painted to look worn. I added Burnt Umber and Mars Brown oil colours to get the basic shadows and mid-tones in place, and then adding cracks and scratches with Mars Yellow and Titanium White to the edges of the belt.

The Tattoos were added just prior to fixing the shield in place; the swirling Celtic designs were done with a fine brush and a mix of Prussian Blue and Mars Yellow oil paints. I added some very basic highlights to the tattoos, but didn't want to go too far and chance ruining the simplicity of their design.

Some ground-up pastel chalks were added to the areas of the model that might get dirty in a fight, hinting that the battle had been fast and furious. There was some added to each knee, the lower legs and a small amount to the left shoulder too.

I decided to add a couple of minor cuts to the model as well, making thin lines of a dark red with a mix of Mars Brown and Carmine oil colours. Small runs of blood were brought down from each of these, although 'less is definitely more' in cases such as this.

Finally the shield was glued in place, after the model had first been added to its groundwork.



Final thoughts

This is a good model if just built from stock. Then again, you can't go far wrong with anything from the Pegaso range. I realize that a lot of people will be making exactly the same assumption as I did; that by simply removing the head and adding the helmet, the model will look different. I expect a whole host of the same idea at Euro Militaire 2006; in fact, I'll be disappointed if there aren't at least half a dozen!

I will be interested to see what these other modellers have done to get around the problems of what the model is now doing, with the right hand in particular, and all the different ways in which the pose is altered. Just tilting or turning the head will alter the mood of the figure, and giving him a different weapon or something else to hold will alter things further.

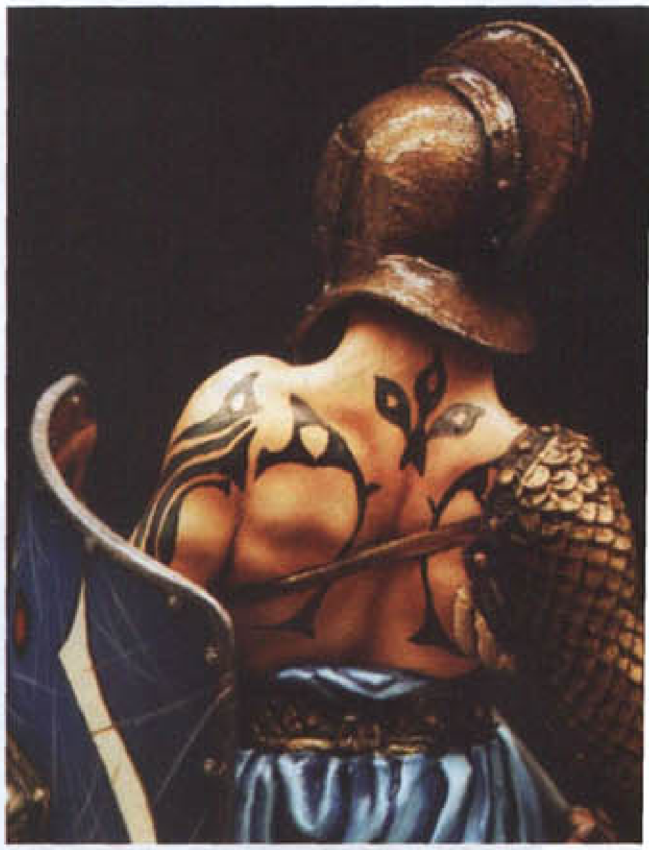
I'm pretty certain that gladiators were pitted against differently armed and armoured opponents. Also that certain types of armament and weaponry were accepted as antagonists. Using a second helmet off this model as though he's just fought against a similarly armoured chap is probably not accurate. I'm not one to say that it would never have happened, but I'm sure there's plenty out there that would. Maybe adding a trident and net - as though picked up as trophies, with the sword stuck into the ground as Pegaso intended might work?

It's been enjoyable making these changes, and hopefully I've been one of the first to try tackling the problems of what comes next. Maybe you can see where things could have been done better, and it might give you a few ideas of what not to do.

Hopefully I've pointed out a few of the pitfalls of what on the face of things seems a 'quick fix conversion' into something that makes you have to alter quite a few other areas just for the idea to take shape.

Am I happy with what I've done? Yes, I am. I do like the stock version of this figure though, and now that I've got the conversion out of my system, I might just buy another one of these and do it straight from the box.

The 75mm range of models from Pegaso seems to be expanding nicely, and all the models I've seen in this range are well worth having a go at if the subject matter takes your fancy. Allied to this, the price is good, at around £23 in the UK. All the range is available from Pegaso direct, or alternatively from Historex Agents of Dover.



Sources

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www.pegasomodels.com
Historex Agents, Wellington House, 157
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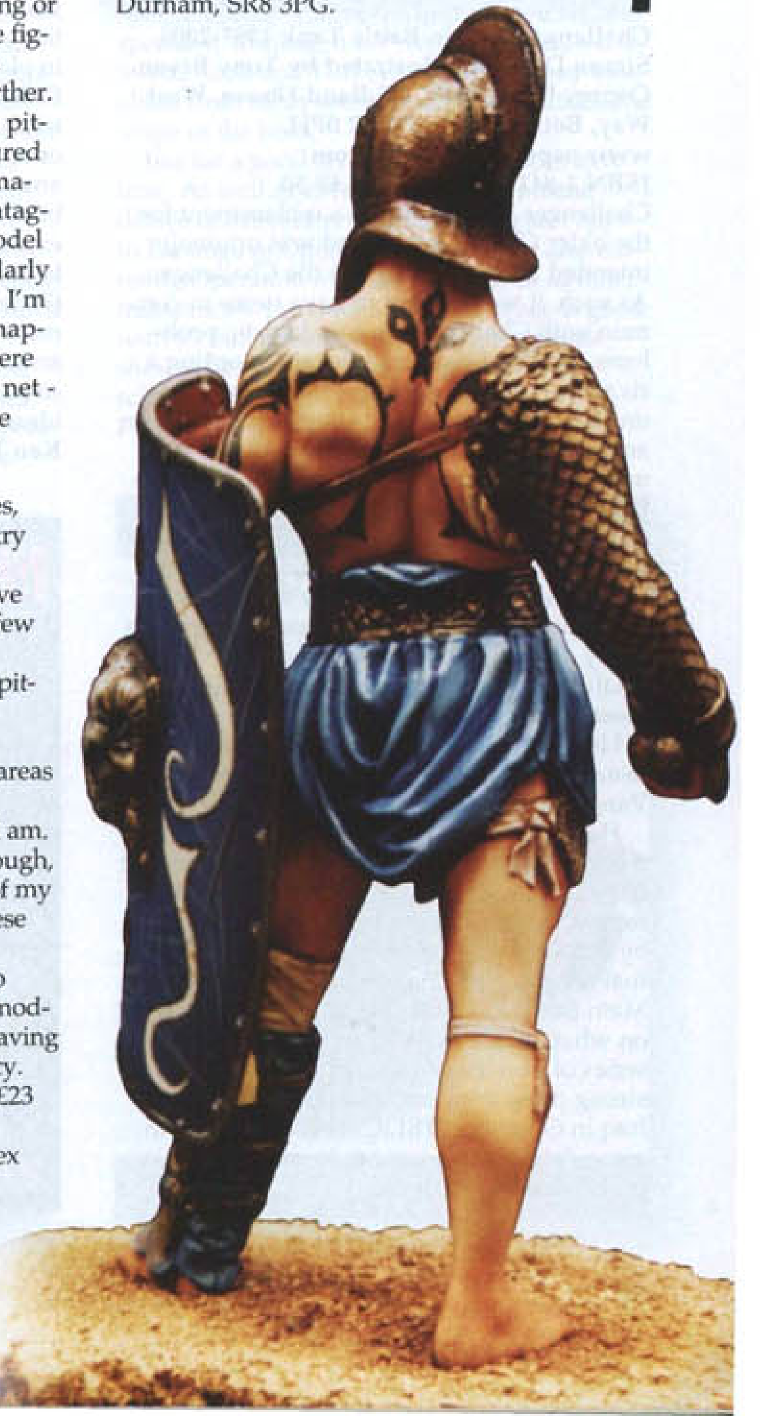

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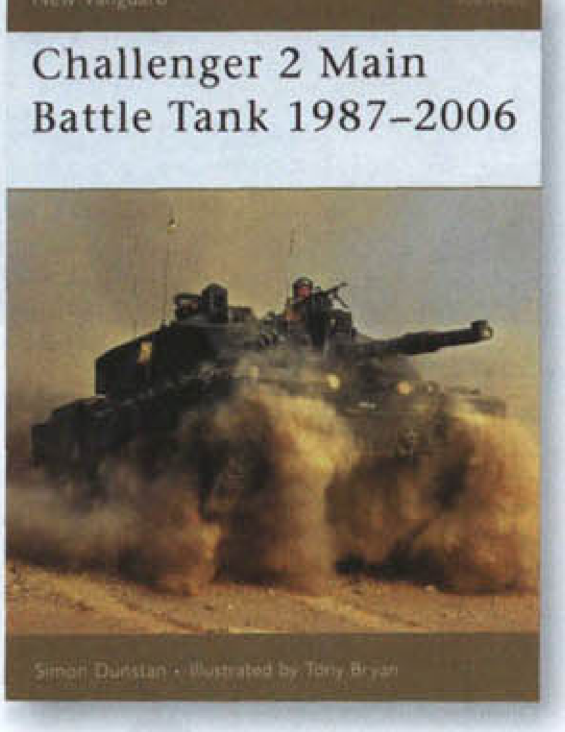

New Vanguard
Osprey
Challenger 2 Main Battle Tank 1987–2006
Simon Dunstan • Illustrated by Tony Bryan

Challenger 2 Main Battle Tank 1987-2006, Simon Dunstan, illustrated by Tony Bryan. Osprey Publishing, Midland House, West Way, Botley, Oxford OX2 0PH. www.ospreypublishing.com ISBN 1-84176-815-4. Price £9.50

Challenger 2 began life as a replacement for the older Chieftain tank and was originally intended to serve alongside the Challenger. As such, it would need to have items in common with Challenger to ease logistic problems. Any real chance of Britain adopting a rival design from abroad was thus very unlikely from a practical standpoint, factor in any political fallout and its adoption was more or less assured. However, after the initial poor showing of the Challenger in the Canadian Army Trophy in 1987, every effort was made to ensure the new tank would be the best available and set new standards of reliability. Despite its similar name, there are many differences between the older Challenger and Challenger 2, which is in most respects a new vehicle.

How this all came about is described in his usual expert style by Simon Dunstan in New Vanguard 112

He leads us through the design, development and adoption process and gives us a lot of detail and information in a very readable format. This is followed in the same manner by accounts of its entry into service, the eventual adoption of Challenger 2 as Britain's sole Main Battle Tank, its use in the Balkans and on what appeared to be an unsuccessful series of exercises in Oman, which attracted strong press criticism, and its deployment to Iraq in Operation TELIC. This is covered in some detail with accounts from different units which used them.

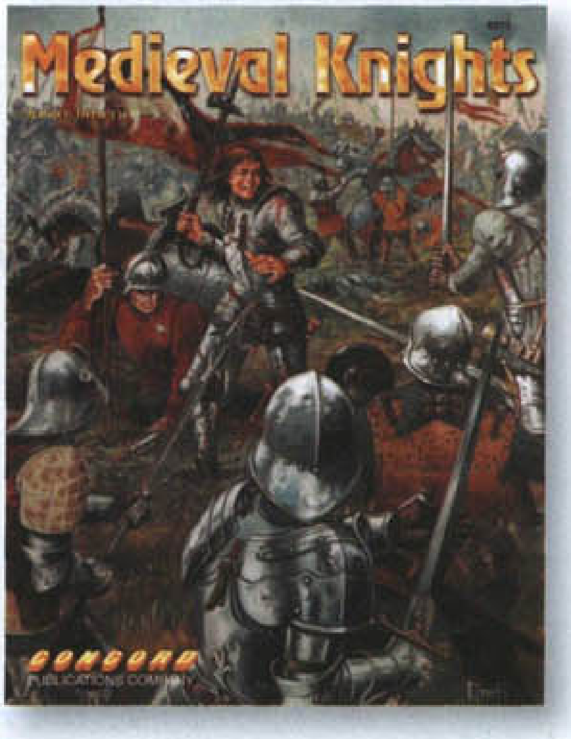
Alongside the text are a selection of photos, a mix of black and white plus several in colour, the captions to which have a lot of information contained in them. Make sure you read them as closely as you do the main text or you will miss much. Colour plates do not follow the usual Osprey format but are placed throughout the text. These show various colours and markings schemes on exercise in Poland and Canada as well as deployed to Kosovo and Iraq. Commentaries for these are also a great source of information, from the different colours used by regiments for markings and what some do with tennis balls...

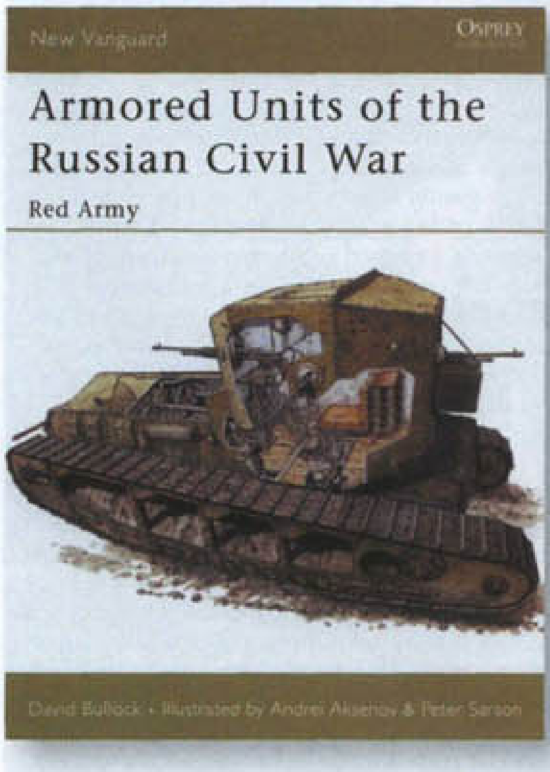
So far Challenger 2 has not had any specialist variants in service, though the Armoured Repair and Recovery Vehicle is covered in some detail and one colour plate while the proposed Trojan and Titan and the improved Challenger 2E fir export are shown in photos with good captions.

Overall impression, as with the earlier New Vanguards by Mr Dunstan on Centurion, Chieftain and Challenger, are admiration at how much information can be put together in such a compact form and passed on in such a readable manner. Anyone interested in this latest British tank will be well-served by adding a copy of this book to their collection.
Peter Brown

Medieval Knights, Justo Jimeno. Concord Publications Co., 603-609 Castle Peak Road, Kong Nam Industrial Building, 10/F, B1 Tsuen Wan, New Territories, Hong Kong. www.concord-publications.com ISBN 962-361-101-3 Price £12.95

From time to time Concord step out of their Second World War period for books and this latest (6013) is one of them. Medieval Knights is essentially a picture book with with mainly paintings of battles by the author. The illustrations are quite good - colourful and some gory in places. They remind me of the work of Richard Scollins, but executed not by the same technique or style, but they are as accurate as once could expect in terms of weapons and armour and the locations. The author's style is bold and colourful and he likes suitable facial expressions on his subjects. Mainly European battles are covered, but man to man combat (Pedro and Enrique for Castile) plus tournament scenes. The book has with illustrations of arms and,armour, helmets and heraldry. Not so much a modelling reference but more an ideas book.
Ken Jones




New Vanguard
Osprey
Armored Units of the Russian Civil War
Red Army
David Bullock • Illustrated by Andrei Aksenov & Peter Sarson

Armored Units of the Russian Civil War - Red Army, David Bullock, illustrated by Andrei Aksenov & Peter Sarson. Osprey Publishing, Midland House, West Way, Botley, Oxford OX2 0PH. www.ospreypublishing.com ISBN 1-84176-545-7. Price £9.50

The Russian Civil War, which followed the Great War of 1914-18 is not well-documented in English, and the part played by armour is even less well-known. That situation has been redressed by the earlier New Vanguard 83 covering White and Allied units and is further improved by this latest New Vanguard 95 title covering the Red Army.

Equipment fell into three categories. The first and perhaps most important given the huge area covered by the fighting and the importance of the railway network, was armoured trains. Often overlooked, these machines have their limitations from the obvious one that they are restricted to existing lines to less obvious ones like their great weight limiting the bridges they could use and their often short range between refuelling. In the right place and at the right time their impact could be decisive. Their armament may appear meagre compared to the tanks of the Second World War, but they could still bring fire to bear from field and sometimes heavy guns as well as machine guns. While they varied in detail, they often followed the same basic principles with some having revolving turrets and others more open mountings for their big guns. Descriptions, photos and colour plates will allow some unusual models to be built, at least the basic rolling stock and track are available in several scales as a starting point. Coverage is extensive, the author claims this is the first detailed coverage to be made generally available and that appears to be no idle boast.

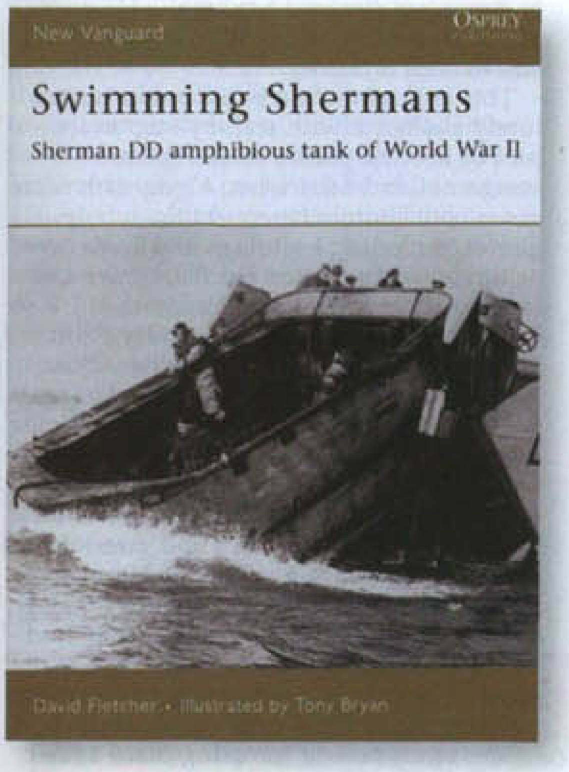
Russia was a major user of armoured cars, both imported as complete vehicles and home-built on imported chassis. These also varied from lighter vehicles with machine guns to heavier types easily able to take on tanks. They were often split up into small detachments or even single cars and had mixed fortunes. Tanks were also sent to Russia, intended to bolster the then-failing Russian war effort against the Germans, they ended up being used by the new Soviet government. Many were to survive in service well into the 1930s and some exist even today, including both British heavy and medium tanks and the French FT series. Amazingly, some of these were supplied by

America, intended for the Whites they ended up in Red service albeit relatively briefly, the last being lost in an unequal battle against an armoured train.

Each class of 'vehicle' is covered separately, giving details of the types, numbers involved, names - not only of the trains, as armoured cars and tanks were often individually named - as well as a final section covering colour schemes and markings. Photos illustrating the text are not always of the highest quality, but given the nature of the times any photos are a bonus. Colour plates show typical items and many include additional details of extra subjects.

This book represents what must be a lot of research. It certainly covers an area which is not well-known and that will at the same time limit its general appeal and increase its value to those looking for something out of the ordinary. As an addition to the overall story of armour it is to be welcomed.

Peter Brown


New Vanguard
Osprey
Swimming Shermans
Sherman DD amphibious tank of World War II
David Fletcher • Illustrated by Tony Bryan

Swimming Shermans - Sherman DD amphibious tank of World War II, David Fletcher, illustrated by Tony Bryan. Osprey Publishing, Midland House, West Way, Botley, Oxford OX2 0PH. www.ospreypublishing.com ISBN 1-84176-983-5. Price £9.50

There were many ingenious devices designed to fit to tanks for specialist roles produced during WW2, and one of the most ingenious was the Duplex Drive or DD equipment designed to convert a standard tank into an amphibian. There had been several attempts to make tanks swim in the inter-war years, but these were mostly small vehicles built for that purpose which had little real use on the battlefield.

Making a full-size tank swim is no easy task. Early attempts mostly involved adding large floats of some sort, but these resulted in a very big vehicle, which was very wide and hard to manoeuvre. There was also the matter of propelling the tank once in the water, and when all that was solved the added equipment would need to be removed quickly so the tank could operate on land as normal.

The answer which inventor Nicholas Straussler came up with solved all these problems when he devised a collapsible skirt, which could be fitted to an existing tank. While this had to be tall to allow enough buoyancy, it could at least be driven far more easily into and out of a landing craft or even between buildings and trees. It could also be positioned close to its launch point with only the screen to be raised at the last minute. Power came from propellers run from the main engine with steering from a conventional rudder. Once ashore the screens were lowered, the propellers swung out of the way and the tank became a tank again.

While this sounds simple it needed careful design work. Initial trials were carried out with a light tank, then orders were placed for large numbers of the then-current Valentine to be fitted out, but the main operational type was to be the American Sherman which was available in large numbers and by the later stages of the war was a mainstay of British tank strength. These were built in the UK and USA with British, American and Canadian units using them. Other vehicles were proposed, but not built. The Valentines were mostly used for training and it was the Shermans, which were used on the biggest amphibious invasion in history on D Day in June 1944.

This account (Osprey New Vanguard 123) follows the design and development of these vehicles from early trials, training on Valentines and use of Shermans on D Day with its mix of successful and not so successful landings, the later across the Scheldt and Rhine rivers and at the end of the Italian campaign plus plans for use in the Far East which came to nothing as the war ended. It covers all aspects including the many changes in units using them, some trained but never saw action then other regiments had to change roles to operate them! In addition there are details of special equipment produced to fit to DD tanks to help them out of the water, from mat-layers to the Valentine ARK which was cumbersome to say the least and the less complex, but more spectacular use of rockets.

The text is illustrated with a good collection of photos showing the early ideas, trials and in-action views, plus a few of post-war experiments on Centurions and even a Conqueror. Colour plates cover a similar wide range, from Valentines through to various Shermans as they were used in France, Holland, Germany and Italy, a cut-away which shows how the DD equipment worked and a final poignant one showing one of those which did not reach the beaches on D Day as it still is on the seabed over 60 years on.

Strangely for such an unusual device the DD has not been well-covered. That makes this book doubly welcome and it will appeal to those who study tanks as well as those who model them.

Peter Brown

HMMWV Humvee 1980-2006 US Army Tactical Vehicle, Steven J. Zaloga, illustrated by Hugh Johnson. Osprey Publishing, Midland House, West Way, Botley, Oxford OX2 0PH. www.ospreypublishing.com ISBN 1-84176-946-0. Price £9.50

The Humvee has become as well-known in modern eyes as the jeep was to an older generation. It appears everywhere where American forces operate, which given its intended purpose is not surprising. The High Mobility Multipurpose Wheeled Vehicles was designed to replace three series of light vehicles in the American inventory, which for various reasons had not lived up to expectations. It is the vehicle of choice in the front line where its rugged construction is essential, leaving less demanding or essentially domestic roles to less capable designs.

Its history is not straightforward, several companies came up with proposals for what was eventually to become the Humvee.

The process by which the final design came about is described here, in New Vanguard 122, then the really complicated matter of which HMMWV is which Humvee is dealt with. As it was designed for several roles, a variety of sub-types exist which, in common with all US equipment, is designated using a series of numbers preceded by an M. Some types came in two forms, with winch or without which though in all other respects the same had different M-numbers. US Marines versions used another series of numbers as well. Over the years the original designs have been improved. As the need for greater carrying capacity became apparent, a new generation of Heavy HMMWV Variants or HHV appeared, many in the same roles as the original but denoted by -A1 suffixes. Further improvements to reduce environmental impact and add extra features resulted in -A2 series vehicles. To allow the series to carry more protection - though most types could be fitted with add-on kits - Enhanced Capacity Vehicles came about, but these use a new series of designations separate from the older ones.

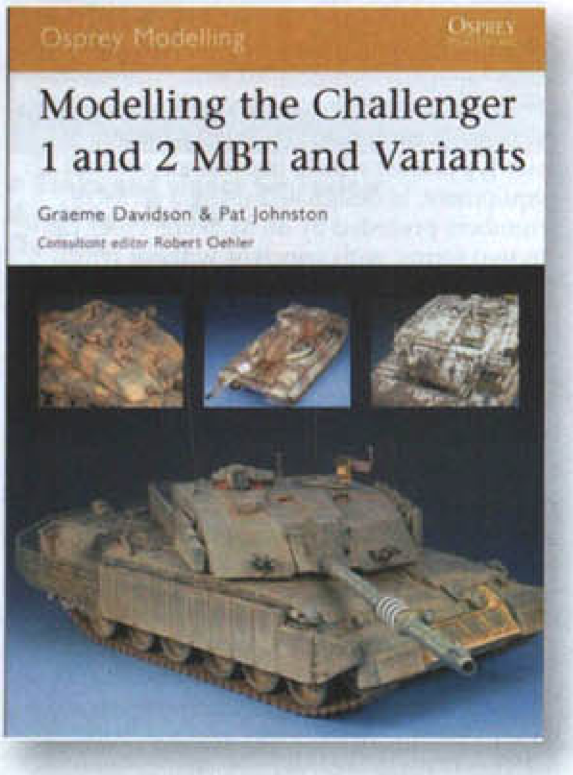
Thus we can have a 'basic' vehicle with several sub-types with or without winch, most of which also produced as -A1 versions though with some were new types which were not in the original series. Most, but not all, became improved as -A2 and then there are the all-new armoured types. This is at least covered in a simple table listing over 40 types for ease of reference! In addition there were variants which were proposed, but never adopted and many units in Iraq have produced their own additional armour using materials available locally.

Although the main users in terms of numbers are the US Armed Forces, HMMWVs serve with a number of other armies though usually in small numbers and often with Special Forces or airborne units. There are also specialist 'armoured car' versions produced in Switzerland and Turkey, as well as many lookalikes from other sources which are outside the scope of the book.

But for a good account of the vehicle, look here. As well as covering its development, details of active service from the earliest days in Panama, in Operation *Desert Storm* and currently Operation *Iraqi Freedom* as well as other missions are provided. Photo coverage is good with all but one image in colour; the plates show typical and not-so-common colour schemes in US and other service.

Peter Brown

New Vanguard
Osprey
HMMWV Humvee 1980–2005
US Army tactical vehicle
Steven J Zaloga • Illustrated by Hugh Johnson


Osprey Modelling
OSPREY
Modelling the Challenger 1 and 2 MBT and Variants
Graeme Davidson & Pat Johnston
Consultant editor Robert Oehler

Modelling the Challenger 1 and 2 MBT and Variants, Graeme Davidson and Pat Johnson. Osprey Publishing, Midland House, West Way, Botley, Oxford OX2 0PH. www.ospreypublishing.com ISBN 1-84176-927-4. Price £12.99

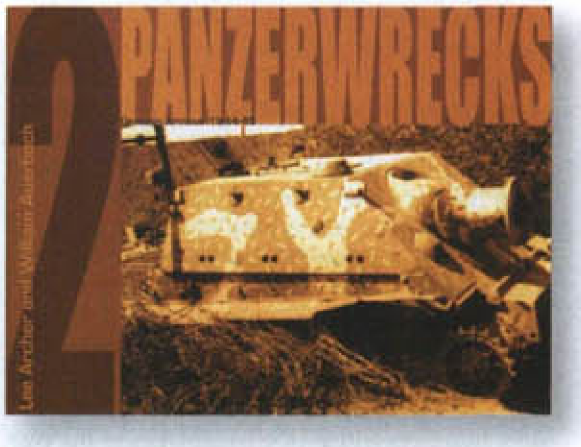
The Challenger series of Main Battle Tanks have been in service for several years now, and kits of both Challenger and Challenger 2 are available in both the 'Braille' 1:72-1:76 scales and 1:35 scale. So this latest edition, No.29 in Osprey's modelling series should have wide appeal.

It deals with both small and larger scales, covering seven projects of varying complexity. Each is described and illustrated with clear close-up photos of the build in progress along with photos of the completed item. Unlike others in the series it does not start with a tools and tips chapter, but launches straight into each model. Each one starts with a list of parts, paints and references and also a short introduction into the subject.

Taking them in chronological order, first is a Challenger 1 in 'Op GRANBY' or 'GW1' as it is now know, based on the Revell 1:72 scale KFOR Challenger with etched and resin additions. For the same concept, but reversed, this is followed by a real KFOR subject using the Tamiya Challenger in its Gulf variant with a dozer blade from Accurate Armour. This features updated turret basket and corrected add-on armour. Most complex, and expensive, model must be the Challenger Armoured Repair and Recovery Vehicle in UNPROFOR service in Bosnia-Herzogovina using the Accurate Armour conversion for the original Tamiya kit, again with extra detailing.

Next on is one of the less-common versions, a 'Desert Challenger' in Omani service based on Tamiya's Challenger 2 ('Desertised') with extensive work to depict the different engine fit and the Challenger 1-style tracks of this variant. Two British-operated 'Challies' follow, both in Iraq, both with the Royal Scots Dragoon Guards, but otherwise very different. One uses the Dragon 1:72 scale kit with etched and other extras, while the other uses the 1:35 scale Tamiya kit with Accurate Armour's stand-off 'bar armour' as shown in detail in ***Military Modelling*** Vol 36 No 2.

Final subject is undated and maybe even futuristic as it depicts the Falcon turret designed in Jordan and demonstrated on a Challenger 1 hull. While it may not be in use yet, it is finished in colours and markings typical of those standard Challengers, which are in Jordanian service.



Plenty of variety here, and as each model is used as much to demonstrate techniques as to depict a subject, taken together they could become the basis of similar or different end results using one or other of the kits available. Details of kits in three scales plus a surprisingly long list of conversions, detail sets, accessories and decals along with books, magazines and web sites to give extra information round off a very useful package.

Peter Brown

Panzerwrecks, German Armour 1944-45, Lee Archer and William Auerbach. PO Box 164 Heathfield, Sussex TN21 8WA. lee@panzerwrecks.com www.panzerwrecks.com ISBN 0-9754183-1-9. Price £16.99

If you bought the first *Panzerwrecks* book then you'll know what to expect and *Panzerwrecks 2* will not disappoint you and if you like to spend time poring over photographs of German vehicles then this is the book for you.

Many photographs of military vehicles taken by soldiers during the Second World War are now emerging and rivalling those available from official archives who, with the exception of the United States, have simply priced themselves out of the business by demanding crippling reproduction fees. There must be thousands of pictures of wrecked and complete vehicles that have lain dormant in attics, basements and other nooks and crannies all around the World since the end of the Second World War and *Panzerwrecks* has many such photos.

An important part of the book is the informed and extended captions. There is no text, as such, it's not needed, and only the captions are required to guide the viewer to look at the photos more closely. You never know, you may see something the caption writer missed - but that's highly unlikely in Panzerwrecks.

In addition to the expected big Panthers and Tigers the variety of other types is amazing. Photos of dumps of, groups of and single vehicles are featured throughout. This time there is an extended sequence of Italian tanks (M40 and M41) and *semovente* along with some *PzKpfw II* turretless used for driver training fitted with unwieldy looking wood-burning gas producing units (*holzvergasser*) to conserve petrol, and some other rarely seen types. *The PzKpfw II* fitted with the *holzvergasser* would make an interesting model.

However, the one photo that really tickles me shows a little *PzKpfw I Ausf B* fitted with a *7.5cm StuK 40* from a *Sturmgeschütze* and photographed in Berlin. You don't need a vivid imagination for how that diminutive overloaded chassis would have performed when that gun fired! If it ever did. Model anyone?

There's hours of ongoing entertainment within for modellers and military vehicle enthusiasts alike and *Panzerwrecks* can be dipped into at any point and you'll probably notice something you missed from the first time you looked. With a lot of photos coming to light in recent times, especially from German sources that were taken during the Second World War, perhaps an 'Alliedwrecks' or 'tankwrecks' isn't completely out of the question. Lee Archer and William Auerbach aided by their consultants have done a good job producing this book. Highly recommended.

Ken Jones

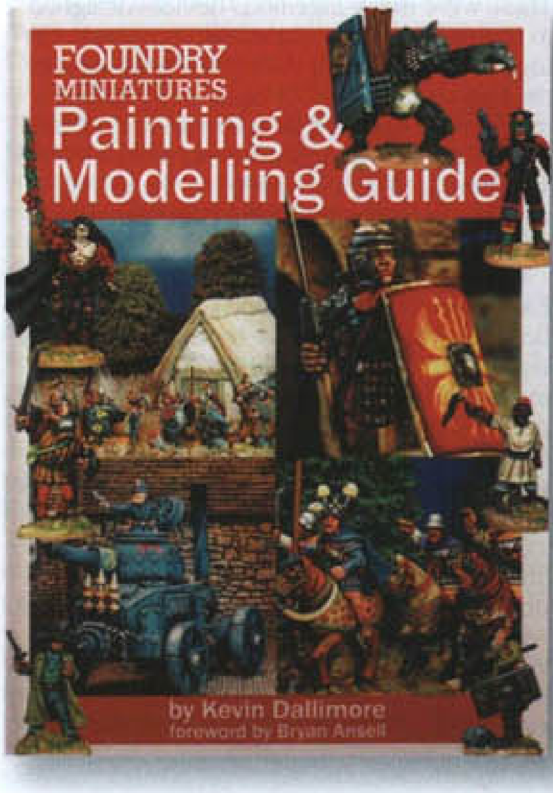
Foundry Miniatures Painting & Modelling Guide, Kevin Dallimore. Foundry Publications, 24-34 St Mark's Street, Nottingham NG3 1DE. www.wargames-foundry.com ISBN 1-901543-13-7. Price £25

Like most painters of miniature figures Kevin Dallimore briefly flirted with what he can safely now term 'larger scale models', before being attracted to the 'small side' of the force, wargames and the 15mm-upwards, figures he terms 'smaller lead brethren'. - He eventually went on to work for Wargames Foundry and the rest is history.

This is Kevin's first book and he's absolutely packed it with step-by-step examples of how he paints small figures - wargames and otherwise. Along with some guest contributors he covers the whole gamut, including buildings and some examples of fantastic vehicles, I think one is historic. This being a Wargames Foundry publication the 'Foundry Paint System' features throughout; after all as Kevin says in his introduction he designed most of that paint system ... and also,going by the flannel panel, most of this book too!

Painting techniques are 'a bit' different for wargames' figures and the book shows how to do it using Kevin's and guest contributors' methods. Painters of 54mm - 90mm figures may find 'difficulties' painting 1:6 scale figures, just as they may find 15mm or 25mm a challenge. At the end of the day your painting technique must be modified to fit the size of the subject.

The case is made for using black rather than white as an undercoat showing how to build up bright colours on it. Kevin's figures are jewel-like in their appearance, attractive and very eye-catching. Most of the models shown in the book are from the Foundry's own range of 28mm white



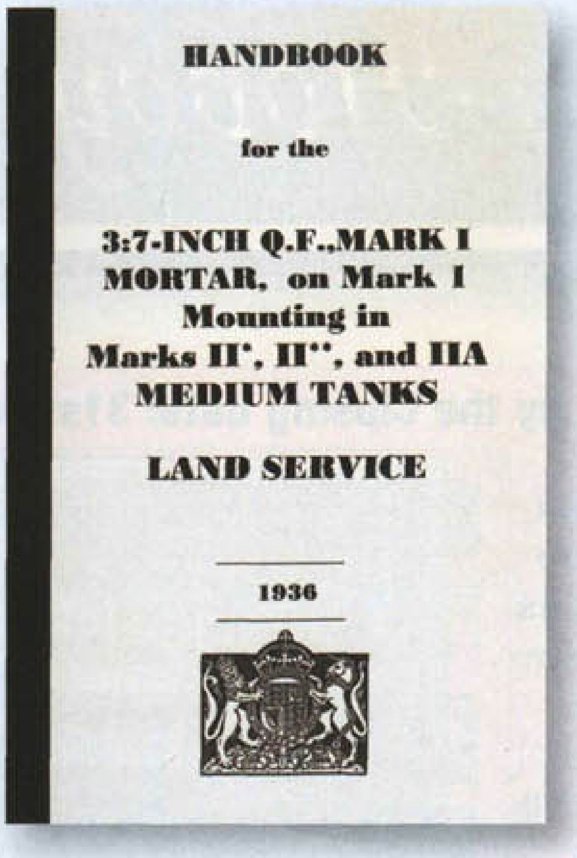
metal models painted with the Foundry Paint System.

There's informative sections on periods to model and paint figures in, with paragraphs on equipment, brushes, paints (with the onus firmly on acrylics), inks, glues, and even the working surface and light sources are discussed. Tools - knives, cutting mats, drills, pin vices, cutters, motor tools, fillers, pliers and files and the paraphernalia of modelling in general.

Many of the photographs throughout are quite big enlargements of the subject in hand and really there isn't another way of doing this, you have to reproduce the pictures fairly large to show how the figures were painted - small pictures of small figures in an instructional type book would be pointless. Kevin's work, it must be said, doesn't look the worse for it!

It is a 'dib in and do it' (or rather have a go!) kind of book, being arranged into projects that can be chosen and tried out by the reader. It's also a good read and beginners especially will find it a big help to getting better results. I must confess I have painted only the occasional 15mm-25mm figure over the many years I've been involved in the overall umbrella title of military modelling for this hobby, but taking a step back and looking at what's presented here, it is immediately apparent from opening the book that Kevin Dallimore is going to show you not only how *he* does it, but how *you* can do it. As a 'hands-on' project type of book it succeeds in getting the point across about how to paint smaller figures. I personally did learn a lot of new names for paints! Tomb Blue, Phlegm Green, Spearshaft Light, Nipple Pink? However, Quagmire and Gratuitous Green I think remain my favourites. Highly recommended.

Ken Jones



HANDBOOK

for the

3:7-INCH Q.F.,MARK I
MORTAR, on Mark I
Mounting in
Marks II*, II**, and IIA
MEDIUM TANKS

LAND SERVICE

1936

Handbook for the 3.7-inch Q.F., Mark I Mortar, on Mark I Mounting in Marks II*, II and IIA Medium Tanks, Land Service 1936. D.P.&G., Military Publishers, PO Box 186, Doncaster, South Yorkshire CD4 0HN. ISBN 1-905265-78-6. Price £19 + £3.50 p&p.**
British army thinking during the 1930s lay firmly in the practices laid down from experience gained in World War One, where tanks armed with guns firing high explosive rounds, or machine guns, to deal with infantry were the prime objective. The British went on to design and fit a 3.7-inch 'mortar', or close support weapon, or a 3-pounder gun into their Vickers built medium tanks of that decade. Unfortunately, the practice continued and was slavishly adhered to until it was too late, but the 'HE' support idea lasted until even Crusader cruiser tanks, and others, being so fitted with 3-pdr 'howitzers' and designated 'CS' in the early years of the War.

Official manuals on British equipment, especially the 3.7inch Mortar, are not easy to find and D.P.&G. have seized the nettle and reproduced the 1936 vintage, British handbook on the weapon and it follows their excellent reprint of the 2pdr antitank gun manual of 1938. The 3.7-in Mortar handbook, like most of its type, begins with a section covering general ordnance and this is, more or less, standing copy for the first 35 pages of such manuals. The handbook is illustrated throughout with photographs and line drawings and shows the mounting common to both the 3.7inch Mortar and 3-pounder gun.

The Ordnance QF 3.7inch Mortar Mark I comprised a smooth bore tube and breech ring nearly five feet long that was breech loaded from within the vehicle. It used quite a sizeable shell - or bomb? When it was fitted to A9 and A10 Cruisers its trunnion mount and recuperator were protected by a large cast armoured casing bolted to the front of the turret, making these types so-equipped easy to recognize. I don't know of any other publication that covers this weapon, whichever way you look at it, it is a bit of a rare bird, in such detail. Its appeal will, perhaps, be limited to those who acquire and collect information, rather than modellers with mainstream interests. If you have a serious interest in British armoured vehicles then it becomes very collectible for understanding the complete picture and, like most 'hard to find' manuals, the reprint does appear desirable.

Ken Jones

Stuart Asquith's quick round-up of some recent releases from Osprey.

Take a look at Osprey on line at www.ospreypublishing.com
All Osprey titles are available from Osprey Direct, PO Box 140, Wellingborough, Northamptonshire NN8 2FA. Tel: 01933 443863, Fax: 01933 443849. info@ospreydirect.co.uk

Indian Tribes of the New England Frontier (Men-at-Arms 428) Michael Johnson. ISBN: 1-84176-937-1. Price £9.50.
This book offers an introduction to the tribes of the New England region - the first Native American peoples affected by contact with English and French colonists. By 1700 several tribes had already been virtually destroyed and many others were reduced and driven from their lands by disease, war or treachery. The tribes were also drawn into savage frontier wars with the colonists. The final defeat of French Canada and the subsequent unchecked expansion of the British resulted in the virtual extinction of the region's Indian culture.

Napoleon's Mamelukes (Men-at-Arms 429) Ronald Pawly. ISBN: 1-84176-955-X. Price £9.50.
The most exotic of all the troops of Napoleon's Imperial Guard were undoubtedly the Mamelukes - the bodyguard of oriental light cavalry that followed him back to France after the 1798-1801 Egyptian expedition. The Mamelukes remained with the Chasseurs a Cheval throughout the rest of the Napoleonic period and this new title tells their story from Austerlitz to Waterloo. The knowledgeable text is supported by some splendid colour plates by Patrice Courcelle - another winner from this talented duo.

Castles and Tower Houses of the Scottish Clans 1450-1650 (Fortress 46), Stuart Reid. ISBN: 1-84176-962-2. Price £11.50.
With the exception of sites such as Stirling and Edinburgh, few Scottish castles were located at strategic points, or were intended to accommodate garrisons. Instead, they were primarily fortified dwelling houses, erected in areas of weak royal authority and feuding between rival clans. Most post-medieval construction focused on the tower house, a distinctive style of Scottish fortification. This fascinating and well-written book looks at the design and function of these towers, plus some larger sites such as Urquhart and Blackness.

British Commandos 1940-46 (Battle Orders 18), Tim Moreman. ISBN: 1-84176-986-X. Price £14.99.
From their establishment in June 1940, the Commando units conducted a succession of daring 'hit and run' raids from the sea into North West Europe, Scandinavia, Italy and the Middle East. Such operations included the raids on Vaasgo, Dieppe and St. Nazaire. The Commandos also brought about more special forces, including the Special Air Service, Special Boat Service and the Parachute Regiment. This book looks at the Commando units raised in the UK from 1940 to 1946 when Army commandos were disbanded and the role assigned to the Royal Marines.

Liberty or Death: Wars That Forged a Nation (Essential Histories Special No7), Carl Benn and Daniel Morrison. ISBN: 1-84603-022-6. Price £16.99.
This new title from Osprey combines previously published material on the French and Indian War, the American War of Independence and the War of 1812-14 into one useful 288-page volume with card covers. (Note the material was previously published as Essential Histories 41: The War of 1812, Essential Histories 44: The French-Indian War 1754-1760 and Essential Histories 45: The American Revolution 1774-1783.)

Struggle for a Vast Future: The American Civil War. Editor Aaron Sbeehan-Dean. ISBN: 1-84603-011-0. Price £20.
In this new 274-page hardback title from Osprey, 12 eminent historians discuss the origins and legacy of the American Civil War. Each chapter offers a perspective on key themes of the conflict; innovation in military and naval warfare~ espionage, the role of women and ethnic minorities, emancipation and the personalities of the leaders both on and off the battlefield and the home front are all explored.

Six Cyber-Hobby Panzer

All entries much reach us by the Closing date: 31st July 2006

1:35
Pz.Kpfw.IV Ausf.B
06
26
cyber-hobby.com

Cyber-hobby.com have given us six of their new 1:35 scale kit of the PzKpfw IV Ausf B as prizes in this issue's free competition for readers. All you have to do is answer the following question about the full size German Second World War tank to win one. The first six correct entries drawn after the closing date of 31st July 2006 will get a Cyber-Hobby PzKpfw IV Ausf B kit sent directly to them.

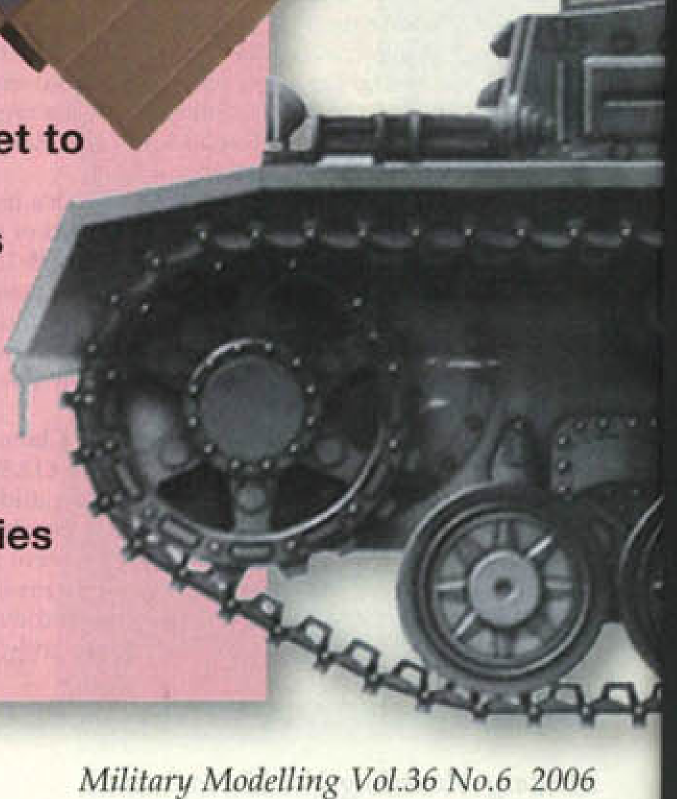
Question: The PzKpfw IV Ausf B appeared in 1938 with chassis numbers beginning at 80201 - how many were built?

Pz.Kpfw.IV Ausf.B

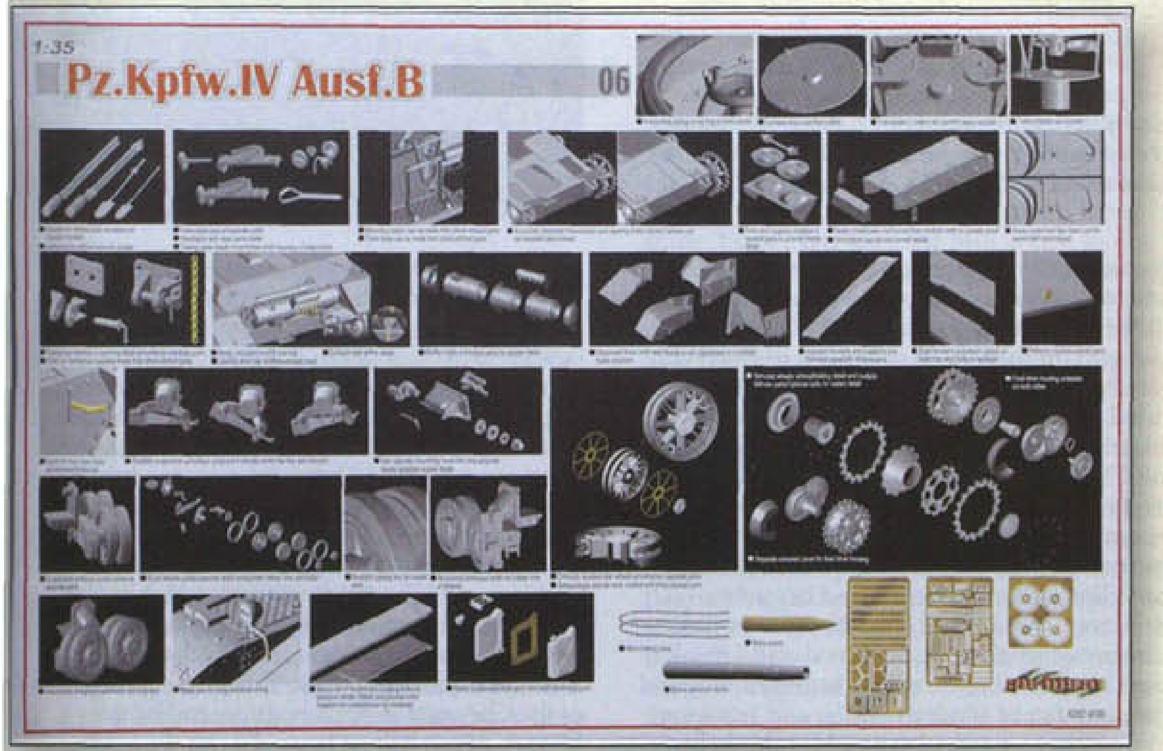
We'll give you a clue! To put you on the right track, the first model of the PzKpfw IV was the Ausf A and 35 of these were produced (Chassis Nos. 80101-80135). More Ausf B models were built.

Write your answer on the red reply coupon on this page, only the number is required, and don't forget to add your name and address. Put the coupon into an envelope, add the postage and send it to the address printed on it. All entries must have the coupon clipped from this magazine page - either in an envelope or stuck to a postcard.

All readers of Military Modelling magazine are eligible. Restrictions apply only to all employees and their families of Encanta Media Ltd. The Editor's decision is final.



ur *Kits to be won!*



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SMALL SCALE SCENE

A monthly column for military vehicle modellers compiled by ROBIN BUCKLAND

- **E-mail: robin@rbuckland.freeserve.co.uk**
- **Website: www. rbuckland.freeserve.co.uk**

15cm Schwere Feldhaubitze 18
S.F.H.18
1:72 SCALE
SCALE PLASTIC MODEL KIT / СБОРНАЯ ПЛАСТМАССОВАЯ МОДЕЛЬ

ABOVE: Milicast 'Battlefield' series CMP (Canadian Military Pattern) truck with the later No 13 Cab. It comes with a full tilt. LEFT: Matador Models' tiny 1:144 scale Beaverett armoured car. RIGHT: Ace Models' limited run injection moulded 1:72 scale German 15cm towed sFH18 heavy field howitzer.

Not a model I grant you, but one useful reference for all Tiger fans must surely be *Saving the Tiger, The Story of Tiger 131* DVD produced by the Tank Museum at Bovington. For those who visited 'Tankfest 2004', who would have missed the sight of what must be about the most famous Tiger I running under its own power for the first time in over 60 years.

Here is a collection showing not only the story of the restoration of Tiger 501, but also the story of its original capture along with additional documentary footage on this most famous of beasts, and original recognition film. If you were not fortunate enough to see it at 'Tankfest 2004' then I can only suggest this film is really worth getting. Naturally, you should watch out for future events at the Tank Museum to see when it might be running once more. More details of the DVD can be found at the Bovington Tank Museum, or at http://www.tankmuseum.co.uk

CMSC

Although I have not managed to start building it just yet, one of the latest conversion kits from CMSC is another impressive model of modern British Army equipment. Designed to go with one of the Revell 1:72 scale Challenger 1 models, CMSC have released a kit to convert it into the Challenger ARRV ('Rhino') the Armoured Repair and Recovery Vehicle. When you see one of the real things close up, you realize just how big they are. I recall looking at one a couple of years ago, and seeing the relatively small crew space, and to be told by the crew that even the crew members of a recovered MBT would be accommodated within that particular compartment. Having seen inside, I have to say you would need to cope with being 'friendly'. It is deceptive when you see the huge bulk of the machine, but the power of the recovery winch and crane on this is equally impressive. I am fortunate that there is one of the prototypes on display near my home, at the REME Museum at Arborfield in Berkshire.

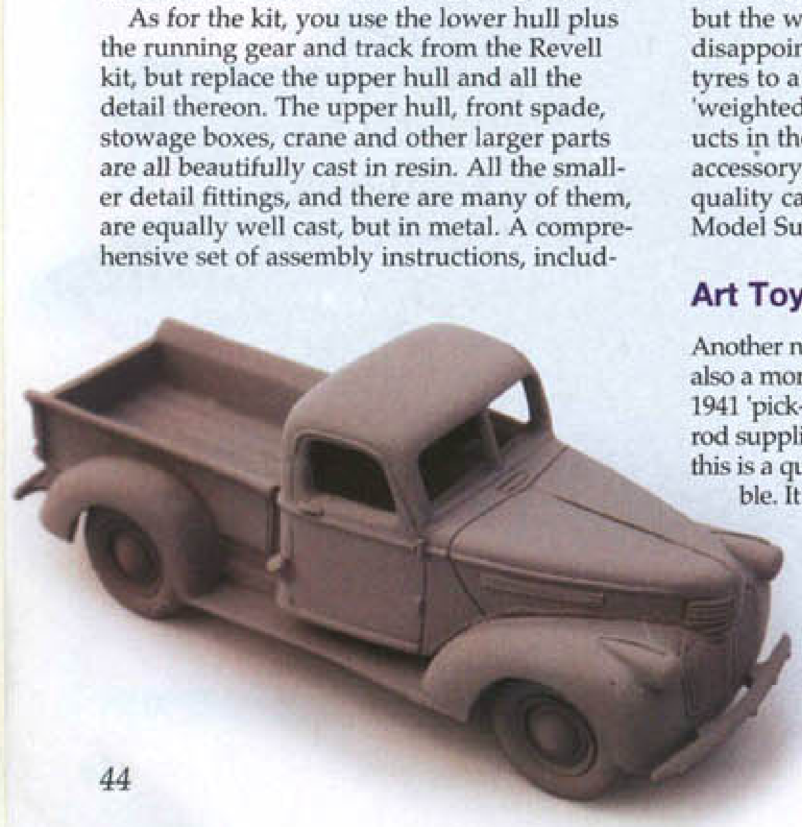
As for the kit, you use the lower hull plus the running gear and track from the Revell kit, but replace the upper hull and all the detail thereon. The upper hull, front spade, stowage boxes, crane and other larger parts are all beautifully cast in resin. All the smaller detail fittings, and there are many of them, are equally well cast, but in metal. A comprehensive set of assembly instructions, including assembly diagrams, is supplied, along with a detail drawing of the arrangement of all the equipment on the rear hull plate. With so much on there, you will need it! Even copper chain and braided copper wire are provided for the towing equipment mounted on this impressive model. Anyone familiar with the CMSC range will know how well these are produced. While it is really still just an assembly of a kit of parts, there is so much to this one that I'd rate it for an experienced modeller rather than one for a beginner. However, that is really just because of the number of small parts involved and I think it might appear daunting to a beginner. Beyond that, any fan of modern AFVs, and recovery equipment in particular would, I think, be enthused by the detail included in this impressive model. You can get the CMSC range direct from 36 Gray Gardens, Rainham, Essex RM13 7NH or if you prefer to order via the internet, then through PDI Model Supplies, 26 Treborough, North Furzton, Milton Keynes, Bucks MK4 1LR. Tel/Fax: 01908 505988. PSmith6328@aol.com

Calibre 72

Having mentioned PDI Model Supplies, they also introduced me to some small scale accessories by Calibre 72. The little set which caught my eye may not be new, but it was the first time I had seen anything of this range. The set has four replacement wheels for the Revell 1:72 scale HUMMER. I liked the Revell Hummer when it was released, but the wheels/tyres were something of a disappointment. This has the tread pattern tyres to a tee, and in addition the tyres are 'weighted'. There is a variety of other products in their range, but I thought this little accessory set was especially neat, with good quality casting. Check out the range with PDI Model Supplies.

Art Toys

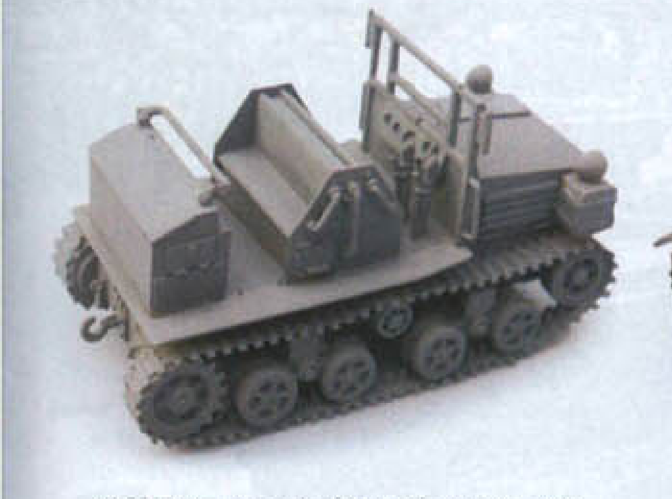
Another new 1:72 scale model from Art Toys is also a more unusual subject. It is the Chevrolet 1941 'pick-up'. Cast in resin, though with metal rod supplied for the axles and the drive shaft, this is a quite straightforward model to assemble. It was all cleanly cast, with just a minimum of resin flash to remove from the wheel arches, and the mould feeds off parts such as the cab and the chassis. I was quite taken by the casting of items like the running boards, as these are quite delicate. The small rear body is cast in one piece, and fits snugly onto the chassis, which is itself cast as a single piece. The interior of the cab includes the seat and steering wheel, but also an interior panel for each door. The metal axles are quite a small diameter, but super glue works OK with these and the resin wheels. You do need to trim the axles to the right length, but it's not a great problem and I like the resin parts, which fit in place to hold them securely. An exploded assembly diagram is included, which also includes copies of a couple of reference photos of the Chevrolet in military guise, and a brief history. About half an hour or so for the assembly job, just leaving you to prime and paint to taste, which for most models is likely to mean a plain coat of Olive Drab. No markings are included, but there is a growing range of aftermarket transfer sets, or etched metal masks, which you can use to make up those of your choice. It is a neat model, and an unusual subject, which I can't recall being done before and available from Art Toys, Ouden Dendermondse, STWG.49, B-9300 Aalst, Belgium.

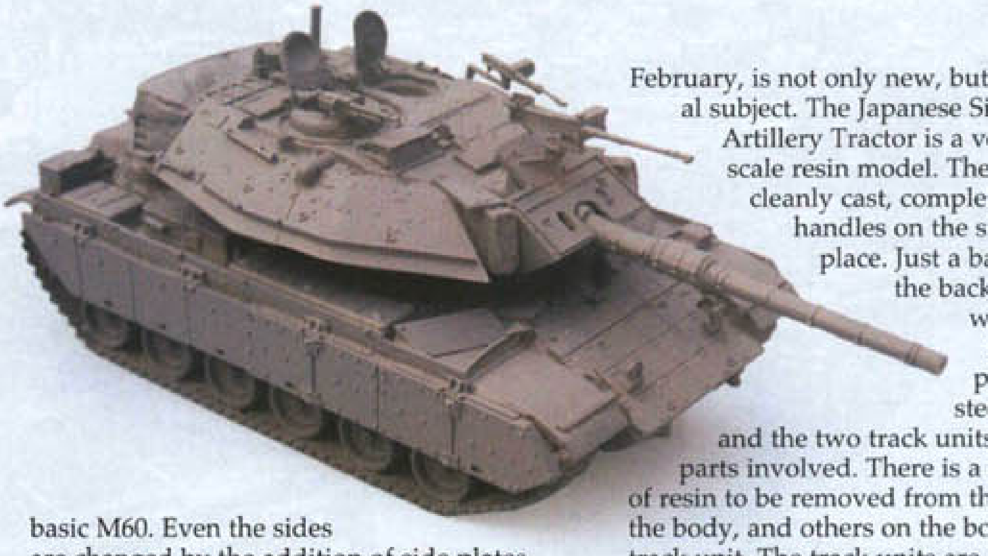


A 'very 1940s-looking' Chevrolet 'pick up' truck in 1:72 scale from Art Toys.

Milicast

A recent addition to the Milicast 'Battlefield' series is not an armoured vehicle for a change, but one of the CMP (Canadian Military Pattern) trucks which saw such widespread use in both North Africa and North West Europe. I have an example with the later No 13 cab, and a full tilt. The truck itself, with body, lower cab, chassis and wheels is moulded in one piece, yes, just one. The additional parts are the cab roof, windscreen, gear lever, steering wheel and hand brake, mud flaps and some optional side window screens. There is some minor flash to remove, and I found some air bubbles on the bottoms of the four wheels where the sprue from the point the mould is poured. These were small enough, and in a position they could have been left, but I just put in a little filler. The windscreen needs some care, as you need to remove the web of resin in the window openings. Cut this out carefully with a sharp craft knife and then you can then add some clear glazing. After a coat of primer (I use a spray can of car primer grey) it is ready to paint to your chosen scheme. The model is available singly, or in packs of three, which is ideal for wargamers. Milicast are at 9 Rannoch Street, Battlefield, Glasgow, Scotland G44 4DT.





ABOVE: An unusual subject and very neat resin model from MGM Models - The Japanese Si-Kae-98 Artillery Tractor in 1:72 scale. RIGHT: Cromwell Models 'Combat Ready' Israeli Magach 6 Batash - a heavily protected M60 MBT with extra ERA (Explosive Reactive Armour) blocks all over it.

Matador Models

When I first began modelling there was nothing like the vast range of models available that there are today. Despite the criticism I have seen sometimes levelled at them on the Internet, it was the Airfix series of 1:76 kits that started so many of us in the hobby. From building kits we turned to converting them into other types, and then some of us tried our hands at scratch building in order to get the model we wanted. Let me begin by stoutly defending those early Airfix models, and applaud that they are still available. Remember, they were first manufactured over 40 years ago, and the technology of mould making and production has advanced a long way since then. I know they have been re-labelled as 1:72 scale, but of course they are still the same old 1:76 scale models they always were, warts and all! Nevertheless, I also remain pleased to see the regular conversion sets being made by Matador Models in particular that use these Airfix kits are the basis for many other interesting models. One of these recent conversion sets is for a real-life Israeli conversion of the M2 half-track. This needs the Airfix M3 as the base model, but then gives the resin cast parts to add the additional armoured rear body, a Daimler a/c turret to mount on it, and a small turreted MG34 in place where the old pulpit mount would have been. These were made up from the leftovers from both British and US equipment left around in numbers after the end of WW2. Made around 1948, these showed the first signs of the added protection that Israeli forces added to safeguard their crews. This is still well demonstrated today in their design of the Merkava, where crew protection is a high priority. This is not a difficult conversion, and with cleanly cast resin parts, and a set of assembly instructions, it would not be too bad a kit for someone relatively new to both kit conversions and the use of resin parts. The end result will certainly be an unusual and eye catching model in your collection. Matador Models are at 6 Cliffe Road, Barton-on-Sea, New Milton, Hants BH25 7BP.

Cromwell Models

Another Israeli AFV, though more modern this time, is a complete 1:72 scale model in the Combat Ready range from Cromwell Models. Based on the M60, it seems hardly recognisable with the extra ERA (Explosive Reactive Armour) plates all over it. The turret and mantlet, along with the forward hull are all very different in appearance from the basic M60. Even the sides are changed by the addition of side plates covering the upper running gear. This is the Magach 6 Batash. The detail on the casting is impressive, even with the tow cable around the back of the turret. Separate turret hatches and the three turret top mgs make it look quite 'busy'. The way the hull is cast in one piece is amazing, just some light flash to remove from between the roadwheels. It is available now from Cromwell Models, 6/6 The Quadrangle, 57 Ruchill Street, Glasgow, Scotland G20 9PX.

Ace Models

Just recently, the Ace Models range of limited run injection moulded plastic kits has done a lot for 1:72 scale plastic kits of German artillery pieces. One of the recent releases has been the 150mm towed *sFH18*. First comment is that the box art on these releases is really attractively done, and should attract you to the kit in the first place. The sprues of white plastic have the parts for the gun and the carriage, but one of the issues of their limited run injection moulding production is that there are some hefty feed points which need to be carefully cleaned off, and there tends to be something of a 'ridge' which shows where the parting lines of the halves of the mould are. The advantage of plastic is that this can be done with a craft knife, but it does mean there is a fair bit of clean up needed in order to get the parts ready for assembly. You can't neglect this, as the parts won't fit properly without it. I'd suggest these are for modellers with a little experience therefore, as I suspect beginners could get frustrated if they are expecting it to go together as the likes of Revell or Italeri. However, the detail is actually very nicely done, and it is clear that a lot of good work has gone into preparing the master model.

The gun can be assembled in either travelling or firing positions. Linked up to the full carriage, I reckon it makes an impressive model and one, which is long overdue in this scale. Once you have removed the parts from the sprue, and done the preparation, then the assembly is quite straightforward. As always, a full set of assembly instructions are included. With the 100mm gun on the same carriage also available in the range, I'd rate this as one I will go looking for more of for my own collection. Well done to Ace for this recent series of guns, and thanks for my example to Pol Models, at 64 Cumberland Road, London, W3 6EY. Tel: 020 8992 3822.

MGM

It's good to report on the MGM (Michael Gohres Modellbau) range from Germany, which has been around for some years, though I have not had the chance to report on them a great deal over the years. A recent release, which I found at Trucks 'n' Tracks in February, is not only new, but also an unusual subject. The Japanese Si-Kae-98 Artillery Tractor is a very neat 1:72 scale resin model. The main hull is cleanly cast, complete with grab handles on the side cast in place. Just a bar at the rear of the back crew set, the windscreen and engine firewall, plus the two steering levers and the two track units are all the parts involved. There is a moulding plug of resin to be removed from the underside of the body, and others on the bottom of each track unit. The track units are quite delicately cast, so just take care in removing that moulding plug, which means I did manage to break mine while doing this, though resin is simple enough to just glue back together. The detail overall is nicely done, and there's just a few parts so not a long assembly job. The end result is a well-produced and interesting model, and good to see another Japanese subject available on the market. MGM Modellbau are at Tannenbergstrasse 3, 47443 Moers, Germany. In the UK, the range is available through Blitzkrieg Models. Having had the chance to look through their quite extensive lists, there are some interesting and unusual subjects in the range, and also some more WW1 models, which may interest many modellers in the smaller scales.

Transfer List

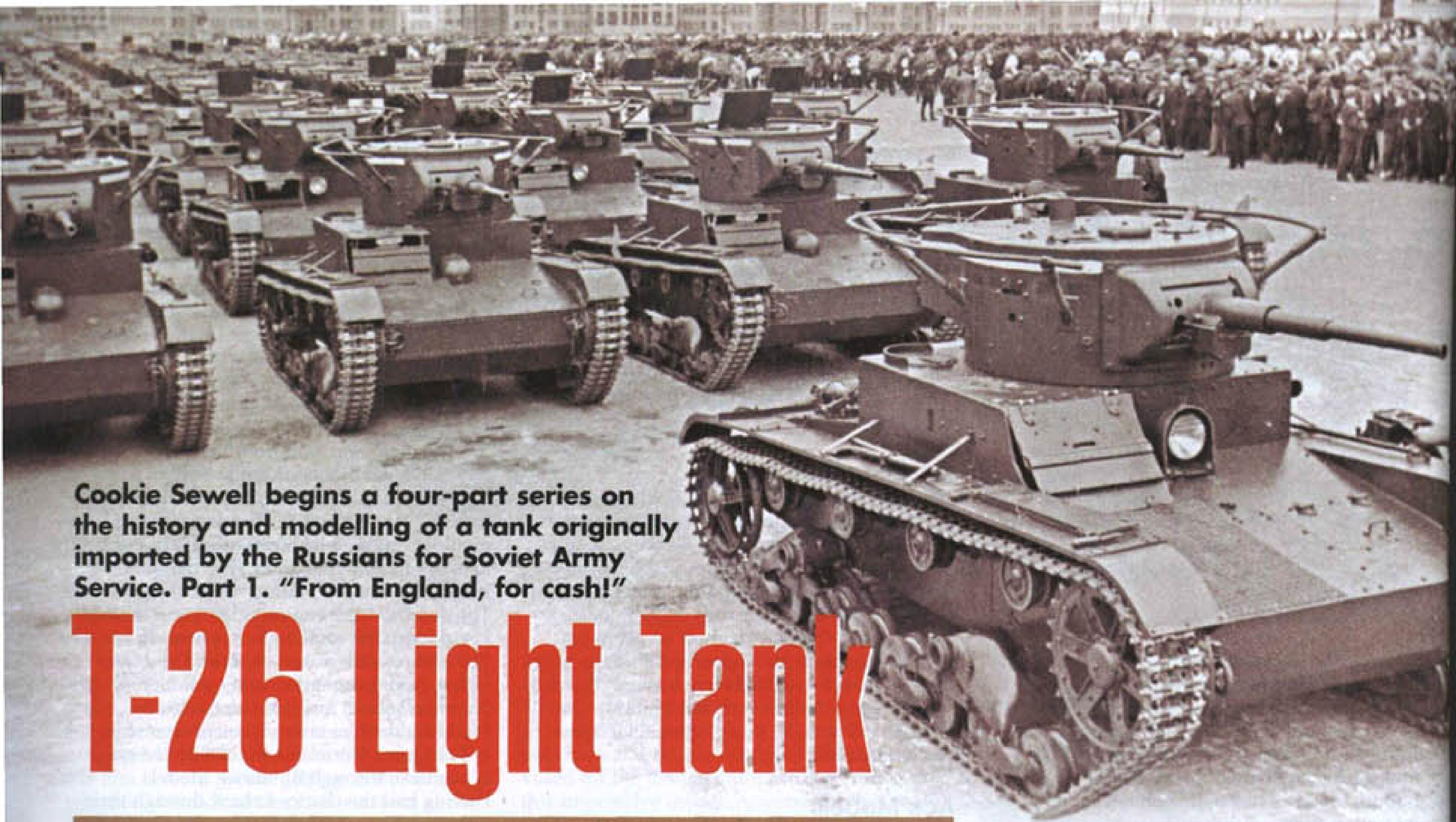
More news then from Bison Decals, as they have two new releases in what for them is a new market in 1:48 scale. Clearly intended for the new releases in 1:48 scale from Tamiya, set one features markings for the Tiger I and features no less than 13 complete vehicles! They include early, late, hybrid, befehls and fünklenk variants. This is neatly printed, and is a rather colourful sheet as, in addition to the common black and white style markings, there are a couple here with some bright yellow turret numbers, so something a bit different for a change. For their second set, they return to the more standard black and white markings, although this time there are also some red turret numbers included, for 12 complete sets of markings for the *PzKpfw IV Ausf J*. As ever, there are diagrams included which quote the references used, along with drawings to indicate the placement and camouflage style on all of the tanks depicted by the markings. It is good to see a steady number of new releases from Bison Decals, and they are producing a very useful series of transfer sheet, and now in the three main scales. Available direct from Bison Decals, c/o Lexell, Ryttarvägen 25, 15159 Sodertalje, Sweden.
bison_decals@hotmail.com
http://www.angelfire.com/pro/bison

Publications

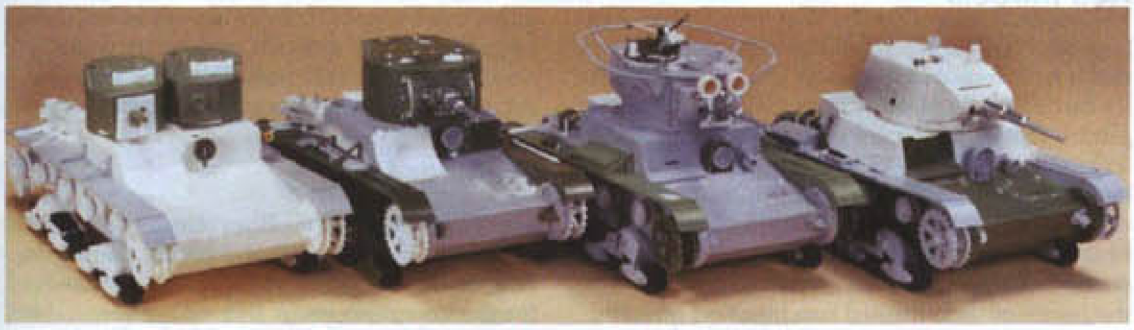
The first issue for 2006 of *Boresight* is here, and has features that include building a Challenger 1 in 1991, an impressive diorama with the huge Russian T-35 and features on the real thing with *Afrika Korps Fünkwagen*, and a small museum called 'Top Kicks' in the USA. Finally, some photos from Iraq, which include not only the Panther mine clearing tank, but also an old M36 and a CV33. *Boresight* is the magazine of the Armor Modelling and Preservation Society, PO Box 374, Weare, NH 03281-0374, USA. ■

Cookie Sewell begins a four-part series on the history and modelling of a tank originally imported by the Russians for Soviet Army Service. Part 1. "From England, for cash!"

T-26 Light Tank



ABOVE: A late-model Model 1936 or 1937 leads a parade of T-26s. Note the high percentage of radio-equipped tanks in the photograph. Also of interest is the fact that the driver's visor and door can be propped open for ventilation when closed, a rather unique feature. (The tanks in the distance have the visor open and the door locked at a 60 degree angle, another feature to the design.) (Collection of Steve Zaloga.)



Modelling four different variants of the T-26 family in 1:35 scale will be described later in this series - they are, left to right, Model 31 with the distinctive turrets, Model 34, Model 36/37 fitted for radio and the Model 39. (Model photos: the author.)

One of the major businesses of arms dealers throughout history is to sell their products to the highest bidder, and rarely does it dawn on them that they may be better than the arms provided to their native country. On the other hand, quite often they do not sell top-line arms to other nations - especially if they are expecting to come to a clash of wills or clash or arms with them - and sell either very generic or second-rate kit to those nations. When they entered the arms exporting business, the Soviets derisively referred to this class of weapons as 'Monkey Models,' with the inference that they were so simple that monkeys could make them work. But what the Soviets rarely noted was the fact that they themselves started their tank industry - the largest by far that the world has ever seen, having probably produced more than 250,000 tanks in its 76 years of existence - based on copies of foreign tanks or licence built copies of others.

The T-26 'infantry escort tank' was one of those, and in 1941 was the mostly widely produced tank in the world with over 11,000 built. It proved to be mediocre in combat, not so much due to its design or armament as the tactics used, lack of good training, and the problems with the politics of the times. But it is a microcosm of the development of both tank thinking and tank tactics in the 1930s, and as such the T-26 stands as one of the most significant tanks ever built.

To understand how the T-26 fits into the scheme of things, one has to go back to the origins of the Soviet tank industry in 1929 and how the T-26s played into the development of that industry.

To illustrate how it was developed, this series of articles covers the history and the building and finishing four different models of the T-26 light tank and the impact of each major change.

Origins

After the Russian Civil War ended, in 1926 the command of the Workers' and Peasants' Red Army (RKKA) decided it needed tanks to form a modern army. At that time, they had a motley collection of tanks left over from the Civil War - 'Rikardo' (British Heavy Tanks Marks IV and V), 'Teylor' (Whippet tanks), and 'Reno' (Renault FT) machines purchased by the Imperial Russian Government during World War I. But experience was thin, and the only effort they had made up to that point was directly copying the Renault FT tank. In 1920 they built 15 of these tanks (five gun tanks with the 37mm Hotchkiss gun and 10 machine gun tanks), but they left a lot to be desired.

Nonplussed, the Soviets decided to start with a modernized copy of the 'Russkiy Reno' tank that also borrowed from the design of the Fiat 3000 light tank - another updated and modernized FT copy. The organization responsible, the Weapons and Arsenal Trust (OAT), turned to the 'Bol'shevik' factory in Leningrad to carry out the work.

The Soviets postulated a three-year plan to produce a tank, and decided they needed battalions of 55 of these new tanks to field a useful force, and with command and support vehicles these came to 60 tanks per battalion. The result, which appeared in 1927, was the MS-1 Small Escort Tank Model 1927, or as it was later known, the T-18. The T-18 was not an unqualified success, as it had many problems and drawbacks, but it did get the Soviet tank industry started. As things became more complex, and other factors intervened, the Soviets created the Directorate for Motorization and Mechanization of the RKKA - the UMM - to replace the OAT in 1929.

They created a number of new directions and concepts for the use of the Red Army, and one of them was the creation of a new main or primary tank. This tank, designed the T-19, was to use Soviet designed hull components with the suspension of the Renault NC light tank (purchased in 1927) and a Soviet engine of 100 HP. Design armament was one 37mm Hotchkiss gun and two 7.62mm machine guns. But design problems dragged out the development of the T-19.

The Purchasing Commission of 1930

The Soviets realized early on that their own designs were crude, prone to break down, and somewhat backward. As a result, in the spring of 1930 a 'purchasing commission' from the UMM, led by its new chief, Innokentiy Andreyevich Khalepskiy, visited several tank producers in other countries. One visit to New Jersey and the erratic genius J. Walter Christie would yield the Christie Model M-1931 tank, which became the basis for the BT and later the T-34 series tanks, but before that they would visit Great Britain.

Vickers had created a series of tank designs with hopes for both internal and external consumption, but with a view to the British economy of the late 1920s-early 1930s their focus was on export sales. Their offering in early 1930 was the Vickers Six-Ton Light Tank Mark E, which could be obtained in any of three different versions: Type A, armed with two Vickers machine guns in separate turrets; Type B, with a single turret and a 47mm (3-pounder) gun, and Type C, a tank destroyer, which as proposed had the two turrets of the Type A and two 37mm cannon, one in the front glacis and one pointing out the rear of the fighting compartment. All three had been rejected by the British Army.

After negotiations and demonstrations beginning on 15th February 1930, on 28th May the UMM purchasing committee signed final contracts with the Vickers Company for a number of their products with an option to purchase a licence to produce them. A report dated 6th June 1930 indicates that the vehicles purchased included: 20 Carden-Loyd tankettes, with delivery to begin in May 1930; 15 Vickers Light Tank Mark E Type A tanks, with delivery to begin in September 1930; and 15 Vickers Medium Tanks (equivalent to the British Army Medium Mark IIA) with delivery to begin in October 1930. Contract price for all 50 vehicles was £205,000. The Soviets decided early on to produce all three designs, and sent engineers to Britain to receive instruction in assembly, as well as obtain the blueprints, assembly directions, and assistance in construction and quality control.

Other items provided to Russia by Vickers included trailers for the Carden-Loyd tankettes, 'laryngophone' intercom systems, Marconi radio sets, running spares for the tanks and tankettes, and 'tank type machine guns' (type not identified.) But after that, with some minor successes, the Soviets appear to have balked at other items.

There were some problems with further negotiations as Vickers noted that other contracts were still unsigned during the second quarter of 1931. While the Six-Tonner was designed as an export model and as such could be sold overseas, the Medium Mark IIA was not, nor was the Carden-Loyd Mark VI, and neither of these received public release for overseas sales until 15th July 1931. (Vickers did note that the Six-Tonner sales kept the company going until the other purchases were approved.)

Plans were extensive. The 'K-25' tankette (as the Soviets dubbed the Carden-Loyd, with 25 being the next number in that sequence and 'K' for Carden-Loyd) was to have 290 copies built in the USSR. The 'V-26' (V for Vickers, 26 as the next number) was to be tested against the T-19 prototype to see which was better.

Plans for the Medium originally saw 300 being produced, but the tank never went into production in Russia for a number of reasons. One reason was its competition with the T-12 and later T-24 tanks, both of which were judged superior but not meeting UMM expectations. Eventually the winner was the T-28 Medium; only the 15 Mark IIA tanks purchased ever saw service, including combat in the Soviet-Finnish War of 1939-40. The tankettes, in a modified format, were built as the T-27. But the T-26 was a different story.

In his formal report to the Revolutionary Military Council of the USSR dated 6th June 1930, Khalepskiy laid out assessments of what they had seen and done, and the Vickers products ranked towards the top. They had looked at Krauss-Maffei in Germany and found some useful trucks; looked at Skoda products in Czechoslovakia with little interest, placed an order for 10 gun tractors from Schneider in France and some Kegresse half-tracks, purchased 50 vehicles from Vickers in England, and two Christie M1931 tanks in the US. While the US offered them the T1E1 light tank for less cost per unit than the Vickers Mark E, they preferred the British tank as more advanced and meeting their requirements. (Khalepskiy did note that the American Timken roller bearing axles were superior to any others, and requested that they order 1,000 from the US for heavy trucks.)

Table 1. T-26 Tank Production Numbers

Comparison of Numbers from Svirin/Kolomiyets and Baryatinskiy

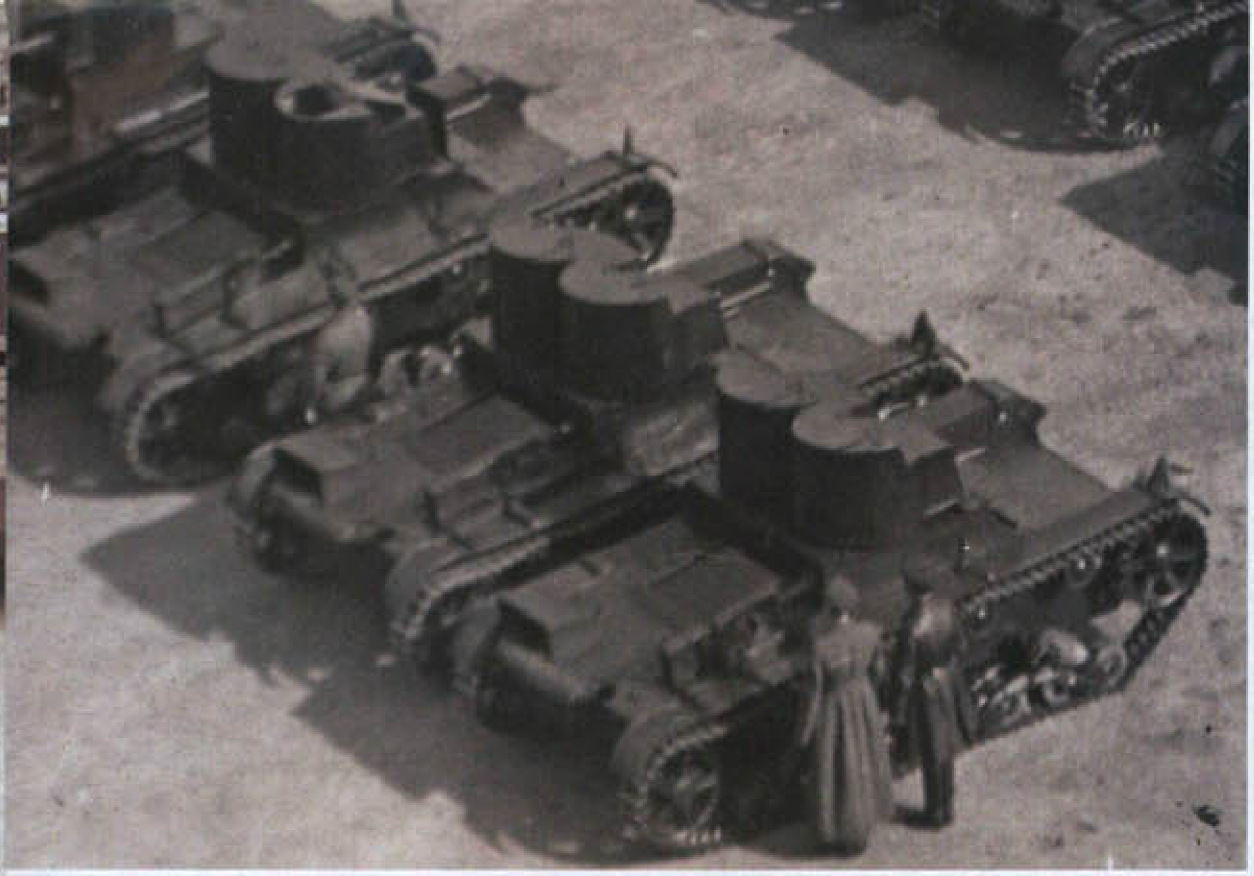
Year	T-26 Twin Turret	T-26 Single Turret	T-26 Single Turret Radio	KhT-26 (all types)	ST-26	TT-TU Remote Control Sets
1931						
B	100	-	-	-	-	-
SK	100	-	-	-	-	-
1932						
B	950	-	-	-	-	-
SK	1,361	-	-	-	-	-
1933						
B	576	616	96	115	1	-
SK	576	693	20	N/A	N/A	-
1934						
B	1	511	457	430	44	-
SK	1	498	457	N/A	N/A	
1935						
B	-	533	735	7	20	-
SK	-	553	650	N/A	N/A	-
1936						
B	-	447	826	10	-	-
SK	-	447	826	N/A	N/A	-
1937						
B	-	-	550	-	-	-
SK	-	-	550	-	-	-
1938						
B	-	-	716	290	-	55
SK	-	-	716	N/A	N/A	N/A
1939						
B	-	957	336	103	-	-
SK	-	945	350	N/A	-	-
1940						
B	-	1018	318	265	-	-
SK	-	1018	318	N/A	N/A	-
1941						
B	-	-	-	116	-	-
SK	-	47	-	N/A	-	-
TOTAL						
B	1,627	4,082	4,034	1,336	65	55 (X2)
SK	2,038	4,192	3,887	N/A	N/A	N/A

Overall Totals Given: Baryatinskiy = 11,218; Svirin/Kolomiyets = 10,117. Numbers do not match up with some totals given due to lack of specific knowledge of production, such as more than 173 tanks built by the Stalingrad Tractor Factory. While Svirin/Kolomiyets state they did not use the numbers for non-gun tanks, it is apparent that their cited reference did include some as 11,218 is the maximum number of tanks possible, and their numbers less than 1,101 different.

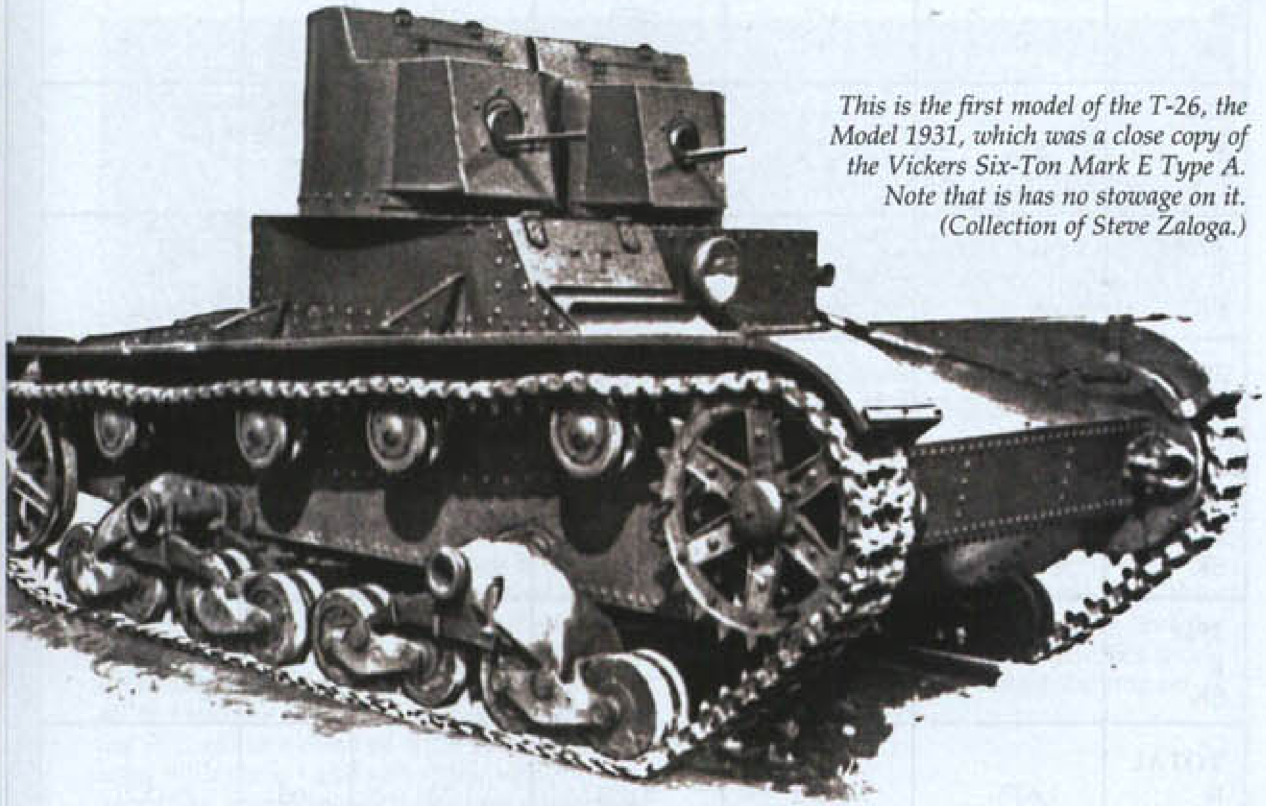
That same day (6th June 1930) they were already planning how to mount the necessary Soviet weapons into the Vickers products to meet requirements, starting with a high-power 37mm gun in the Vickers Six-Ton tank and the new (still under development) 45mm gun in the Medium Mark IIA.

Evolution

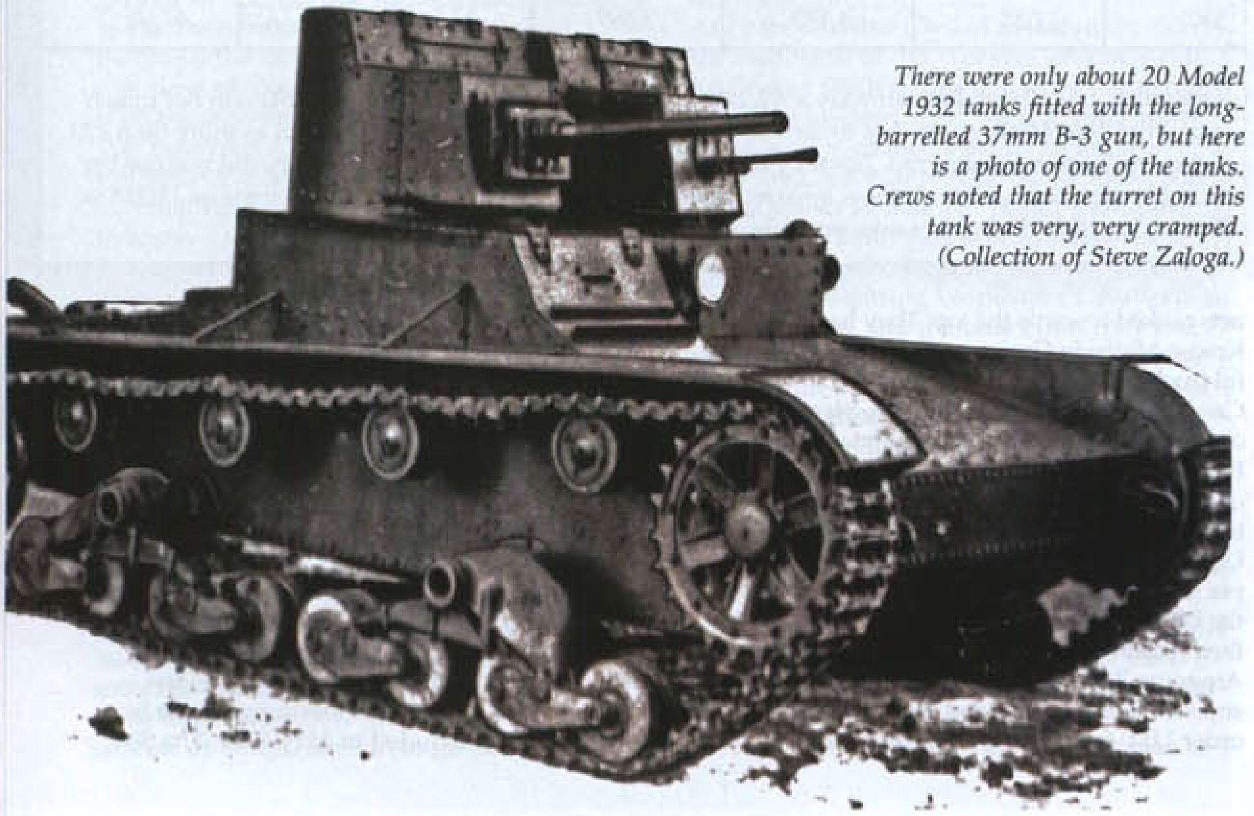
Originally the projected schedule for shipping the T-26 tanks to Russia began in September 1930 and concluded in January 1931; that for the Vickers Mediums began in October and concluded in May 1931. The Six-



A number of Model 1932 tanks preparing for a parade, and the first tank is a twin machine gun tank, the second one an early production cannon model without the splinter shield, and the third one a later cannon model with the splinter shield. Not all tanks got the same fit at the same time. (Collection of Steve Zaloga.)



This is the first model of the T-26, the Model 1931, which was a close copy of the Vickers Six-Ton Mark E Type A. Note that is has no stowage on it. (Collection of Steve Zaloga.)



There were only about 20 Model 1932 tanks fitted with the long-barrelled 37mm B-3 gun, but here is a photo of one of the tanks. Crews noted that the turret on this tank was very, very cramped. (Collection of Steve Zaloga.)

Ton tanks may have been shipped by the later scheme, as the Medium Mark IIA was not released for export until July 1931. Based on a construction directive dated 23 May 1930, the Vickers Six-Ton tanks began to arrive on 22 October 1930, and the last of the original 15 arrived on 4 July 1931.

The tanks were Vickers production serial numbers VAE 214 - 228, and all varied slightly as follows:

214 Two .303 Vickers guns, laryngophone, speedometer, fitted for tow ropes, a pick and shovel
215 Two .303 Vickers guns, laryngophone, speedometer, fitted for tow ropes, a pick and shovel
216 Two .303 Vickers guns, laryngophone, speedometer, fitted for tow ropes, a pick and shovel, plus Marconi radio set fitted
217 Unarmed
218 Unarmed, stowage and engine deck arrangements varied
219 Unarmed, stowage and engine deck arrangements varied
220 Unarmed, stowage and engine deck arrangements varied. 17mm armour on turret sides
221 Unarmed, stowage and engine deck arrangements varied
222 Unarmed, stowage and engine deck arrangements varied
223 Unarmed, stowage and engine deck arrangements varied
224 Unarmed, stowage and engine deck arrangements varied
225 Unarmed, stowage and engine deck arrangements varied
226 Unarmed, stowage and engine deck arrangements varied
227 Unarmed, stowage and engine deck arrangements varied
228 Unarmed, stowage and engine deck arrangements varied

While the new tanks were being shipped, in August 1930 the UMM laid out proposed production planning for their new tank force. The 'Bol'shevik' and Motovilikha plants in Leningrad were to turn out 720 T-20 light tanks (an improved T-19 variant) and 350 T-19 tanks in 1931, 1,500 T-19 tanks in 1932 and 500 more in 1933; the Stalingrad Tractor Factory was to gear up to produce the V-26 light tank, the Kharkov Steam Locomotive Factory the T-24 medium tank, and the Ural Factory for Machinery Construction (later UZTM) a new, heavy tank design. But even with only a handful of prototypes under testing, by 30th December 1930 the Soviets had decided to standardize the V-26 as a new Soviet tank and were changing the plans to produce it.

The competing T-19 design did not go quietly, but in every competition with the V-26 tanks it came in second best. On 13th February 1931, the Revolutionary Military Council accepted the V-26 tank for service under the designation T-26 - before the last of the original 15 ordered from Vickers had even arrived in the Soviet Union.

By then the Scientific Technical Committee (NTK) of the UMM had pretty much given up on the T-19 and were now concentrating their efforts on the T-26. One of the main reasons for its lack lustre showing was its cost; calculations showed that one T-26 tank could be built in Russia for 42,000 Roubles as opposed to the T-19, which would cost a whopping R96,000! Combined with the T-26's inherent reliability (with consideration that these results were based on the British-built export tanks) the T-19 did not stack up. Even two last-ditch efforts to produce a T-19 derivative, two tanks dubbed the TMM-1 and

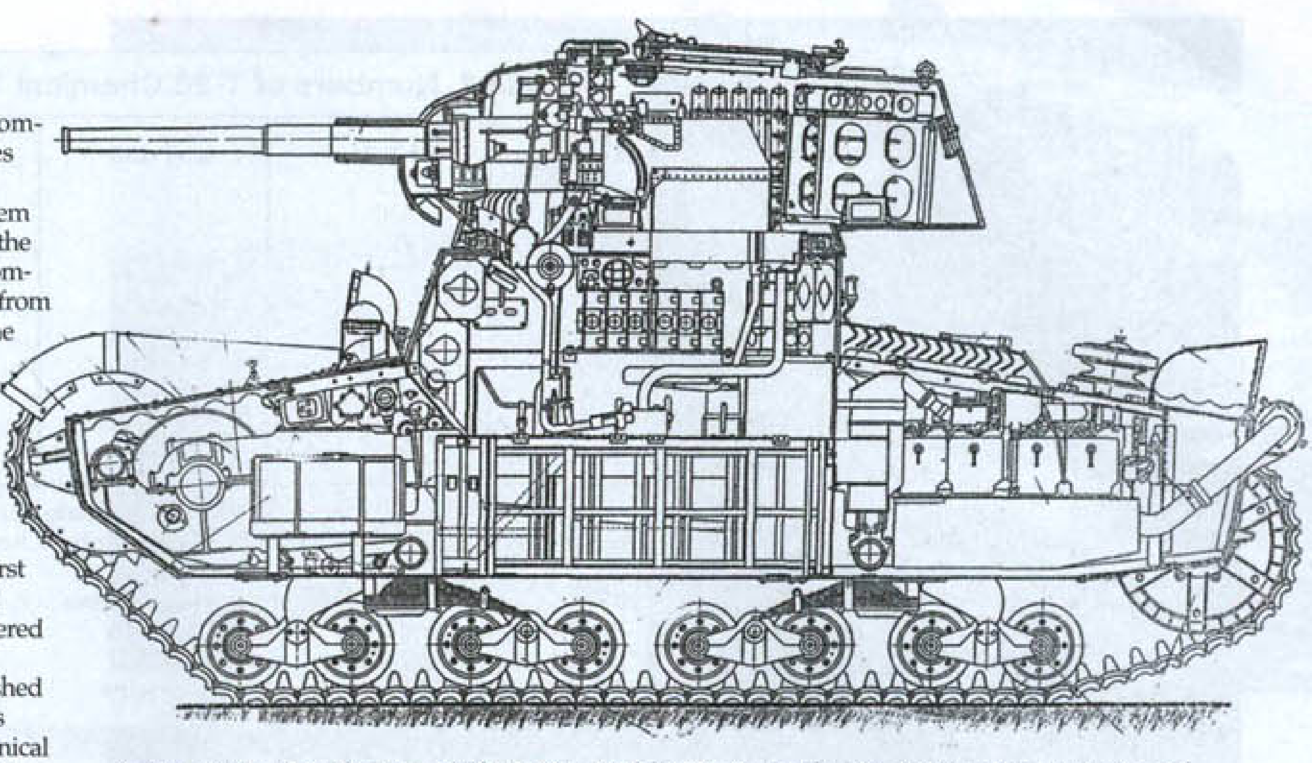
TMM-2 which combined T-26 and T-19 components with an American made Hercules engine, were a flop.

But saying things at the top and doing them at the bottom rarely if ever coincide. Before the T-26 could enter production, every single computation and value had to be changed over from British Imperial to metric measurements. The main production facility was to be the 'Bol'shevik' factory in Leningrad, and the requirements for the T-20 and T-19 were dropped. Plans were to ensure that up to 13,800 T-26 tanks could be produced by surging efforts in the first year of a major European war, but the reality was much less. The 'Bol'shevik' factory produced the first 10 T-26 tanks in mild steel - the so-called 'U' series or validation lot - and all of them suffered massive problems.

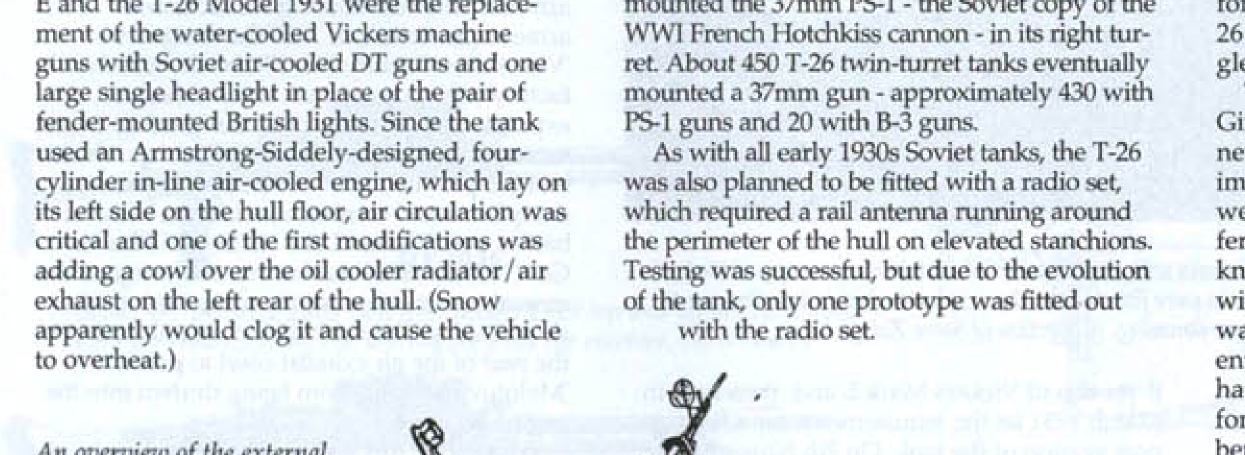
The Soviet-built tanks appeared well finished and complete, but the Soviets had industries which possessed much cruder levels of technical sophistication and were very sloppy about tolerances. Engines did not run or leaked oil profusely; armour plate was too weak to stop even armour-piercing rifle bullets at 150 metres, the hulls suffered cracking, and the suspensions failed. While not publicly admitted, the cost of the first T-26 tanks was also an actual R80,000, not the R42,000 which was estimated and which the original Vickers ones had cost. The 'Bol'shevik' factory was ordered to produce 500 T-26 tanks in year 1931-32; by the end of 1931 the factory had built 120 T-26 tanks; but only six had been accepted for service.

Transformation and Evolution

Initially the only major visible differences between the Vickers Six-Ton Light Tank Mark E and the T-26 Model 1931 were the replacement of the water-cooled Vickers machine guns with Soviet air-cooled DT guns and one large single headlight in place of the pair of fender-mounted British lights. Since the tank used an Armstrong-Siddely-designed, four-cylinder in-line air-cooled engine, which lay on its left side on the hull floor, air circulation was critical and one of the first modifications was adding a cowl over the oil cooler radiator/air exhaust on the left rear of the hull. (Snow apparently would clog it and cause the vehicle to overheat.)



A cross-section from the manual of a T-26-1 Model 1939. As can be seen, T-26s were pretty cramped inside once all of the kit and ammunition was stowed. The engine can be seen (the four cylinder head covers are facing the viewer) along with the plenum for cooling under it and the profiles of the intake and exhaust air louvres. (Steve Zaloga.)



An overview of the external fittings and arrangements of the T-26-1 Model 1939. (Steve Zaloga.)

One of the first major changes was the replacement of one of the two turret-mounted machine guns with a 37mm cannon. Trials covered a number of candidates, the most desirable of which was the B-3 gun designed by Rheinmetall and 'Kalinin' Factory No. 8 (the same basic barrel design was used by the Germans as the 3.7 cm PaK 36). The Main Artillery Directorate preferred the PS-2 gun designed for the prototype T-35 heavy tank 'wing' turrets, but it was not as good as the B-3. However, B-3 production was claimed by the BT-2 series tanks, and as a result the tank mounted the 37mm PS-1 - the Soviet copy of the WWI French Hotchkiss cannon - in its right turret. About 450 T-26 twin-turret tanks eventually mounted a 37mm gun - approximately 430 with PS-1 guns and 20 with B-3 guns.

As with all early 1930s Soviet tanks, the T-26 was also planned to be fitted with a radio set, which required a rail antenna running around the perimeter of the hull on elevated stanchions. Testing was successful, but due to the evolution of the tank, only one prototype was fitted out with the radio set.

The Design Begins to Mature

In 1931 Factory No. 8 created the 19-K 45mm antitank gun, which was accepted for service as the 45mm Model 1932 antitank gun. A conversion for tanks, called the 20-K, was accepted for service shortly afterwards as the 45mm Tank Gun Model 1932. This was a tremendously more useful weapon, as its rounds had nearly five times the explosive power of the 37mm gun as well as much better armour penetration capability. In December 1932 the new People's Committee for Tank Production (NKTP) ordered the T-26 redesigned and a new version with a single turret to mount the new 45mm gun.

The new turret was designed by S.A. Ginzberg and was to be used by both the new version of the T-26 as well as an improved version of the BT-2. Both tanks were given cylindrical turrets of slightly different designs (the BT-5, as the new tank was known, got two hatches; the T-26 only one) with an attached bustle. But this was awkward, and the standardized turret that entered production for both tanks had two hatches and a redesigned rear section, formed from extending the side plates and bending them in at the rear, and then either riveting or welding them to a steel frame. This turret was used by both T-26 and BT tanks from 1933 to 1937.

The new tank, which was only dubbed the 'T-26 Single Turret' to differentiate it from the other model (now the 'T-26 Twin Turret') carried the 45mm gun with a coaxial DT machine gun. Having proved the concept in 1932, this tank also had a good portion of its production - eventually approaching 1 to 1 - mounting a radio set with a frame antenna around the periphery of the turret. While they were called 'handrail antennas' they were not, and even with the low power of the radio sets of the day it could burn an unwary infantryman or tanker who used it for that purpose.

By December 1933 endemic problems with the T-26 series tanks had been identified, and corrections were ordered. The top five problems were: engine overheating; road wheels shattering or chunking rubber and breaking down; no internal ventilation for the crew with resulting powder gas build up; problems with braking on steep roads; and a lack of a device to determine vehicle orientation in regard to slope and cant.

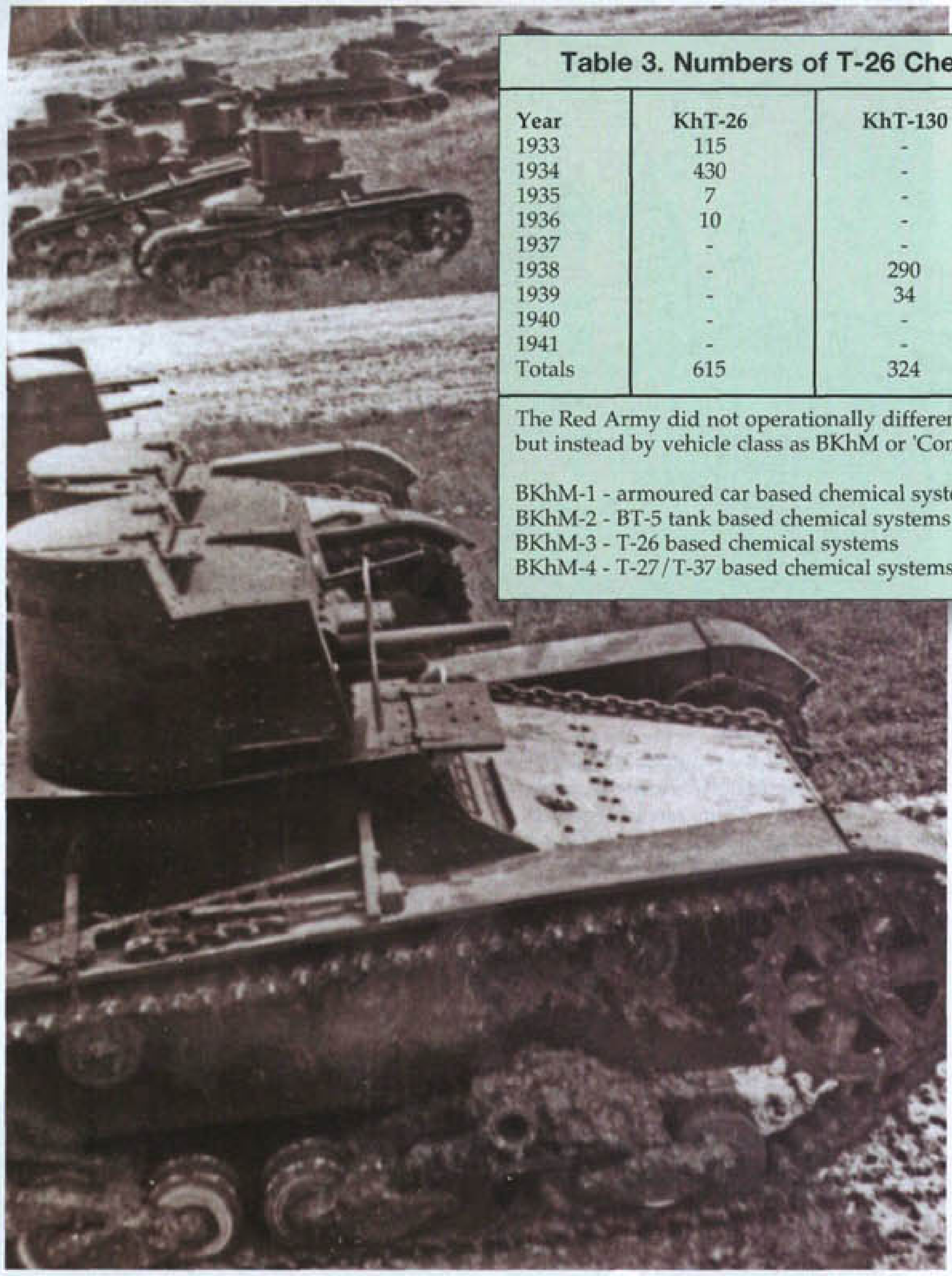


Table 3. Numbers of T-26 Chemical Tanks Produced by Model

Year	KhT-26	KhT-130	KhT-133	KhT-134
1933	115	-	-	-
1934	430	-	-	-
1935	7	-	-	-
1936	10	-	-	-
1937	-	-	-	-
1938	-	290	-	-
1939	-	34	69	-
1940	-	-	265	-
1941	-	-	114	2
Totals	615	324	448	2

The Red Army did not operationally differentiate flamethrower tanks by specific subtype, but instead by vehicle class as BKhM or 'Combat Chemical Vehicles.' These were:

BKhM-1 - armoured car based chemical systems
BKhM-2 - BT-5 tank based chemical systems
BKhM-3 - T-26 based chemical systems
BKhM-4 - T-27/T-37 based chemical systems

The tank in the foreground is one of the Model 1932 tanks with the 37mm PS-1 Hotchkiss gun copy mounted in the right turret. Almost from the beginning these tanks were fitted with 10mm splinter shields over the gun to protect the vulnerable mantlet seam from fragments or jamming. (Collection of Steve Zaloga.)

Also, fuel expenditure of the tank in service was up to 64% more than expected, with early model tanks only managing 140 kilometres on highways and as little as 70 kilometre cross-country. As a result, fuel tanks had to be increased in size, refuelling made more frequent, and estimates made 50% greater when determining fuel expenditure. This was later traced to using poor quality fuel and, as a result, there was a demand that the tank use Groznyy B-59 type 'light gasoline' from the Caucasus, which was cleaner and had a higher octane rating.

The tanks continued to evolve, getting new thicker suspension springs (a change from 6mm to 6.5mm thick leaves and different steels), provision of outer vehicle materials (OVM) and pioneer tools, and a switch from riveted to welded construction. In 1935, the tanks also received the developed production model of the 20-K gun, which had a semiautomatic breech that opened and ejected the shell casing after firing. This gun, the Model 1932/1934 or often just Model 1934, was a great advantage in increasing the rate of fire, and some crews could reach speeds of 10-12 rounds per minute.

This was not the only option the Soviets used to try and up-gun the T-26. In 1930 the UMM showed no interest with the 47mm Type B version of Vickers Mark E and, therefore, in March 1931 let the requirements for a fire support version of the tank. On 7th November 1931 they called on the 'Bol'shevik' factory and two other centres (VAMM and ANIP) to develop a rotating turret mounting a 76mm howitzer for the T-26 chassis.

The resulting vehicle, the KT-26 or T-26-4, mounted the 76.2mm Model 1927/32 regimental gun, which had been modified to become a new model dubbed KT (for 'Kirov Tank'). The factory testing was considered relatively successful, and in 1933 the UMM ordered five tanks for state and troop testing. But while most testing went well, in September 1934 one of the tanks had a 'flash-back' through the breech (leakage of burning propellant) that injured the crew. As a result, orders for 50 more were terminated. (A similar turret was tested successfully on the BT-5, but it took time to develop and went into service on 150 BT-7A artillery tanks.)

It was during the war in Spain - after selling 207 T-26 tanks to the Spanish Republicans at what amounted to usurious prices - the Soviets found out many suspected failings of the T-26 were real, first and foremost being its thin armour. After clamouring for increased armour protection, in 1937 the designers at 'Voroshilov' Factory No. 174 (as the 'Bol'shevik' factory was redesignated after a massive expansion program in 1932) designed an ovate turret for the vehicle with sloped sides, which entered production in 1938. Later, after more complaints and combat results from both the battles over Khasan Lake (1938) and Khalkin-Gol (1939), in 1939 the factory also resigned the casemate section under the turret with thicker sloped sides. They also added a mesh screen to the rear of the air exhaust cowl to prevent 'Molotov cocktails' from being thrown into the engine bay area.

While all of this was going on, the weight of the tank kept increasing, and at the end had gone from 8.2 metric tons (9 short tons, not the 'Six Tons' it was advertised at) to over 10.25 metric tons or 11.3 short tons. Being nearly twice its original design weight caused unending problems for the tank, not the least of which was engine strain and overheating.

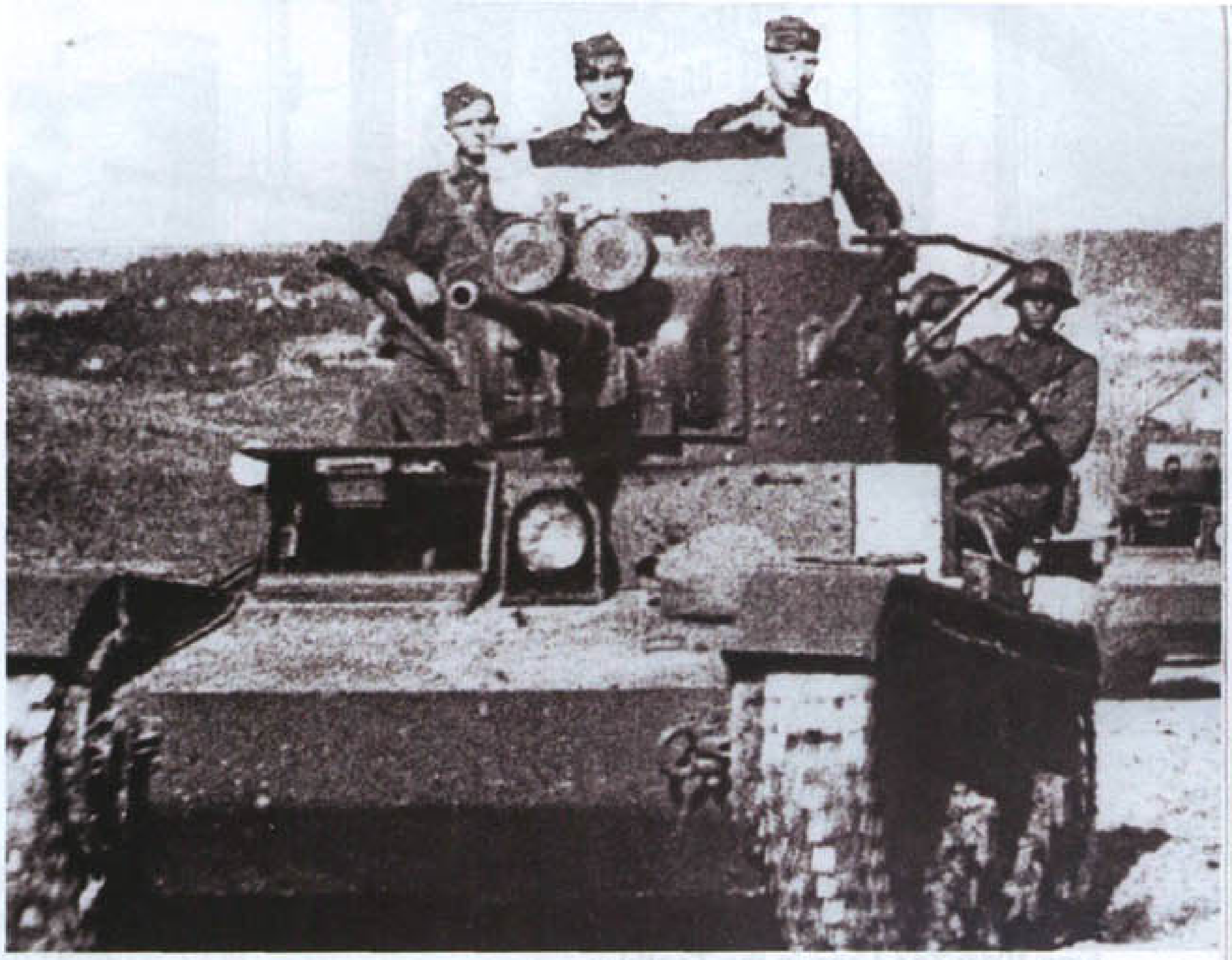
Table 2. Number of Tanks With Antiaircraft Machine Gun Mounts

Year of Production Model of Tank	Total Vehicle Production	AAMG Equipped Vehicle
1938		
Line Tank	None	Unknown
Radio Tank	716	
1939		
Line Tank	945-957	Unknown
Radio Tank	336-350	267
1940		
Line Tank	1,018	208
Radio Tank	318	204

The last great test of the T-26 was in Finland in 1939-40, as it had little effect in the invasion of Poland in September 1939 due to its slow speed. (It was, after all, designed to escort infantry, and as such could not even hit 30 kph on level ground under normal conditions.) In Karelia, however, the Soviets found out that the Finns had antitank guns and good gunners, and as a result many of their slow and vulnerable T-26 tanks were knocked out. The T-26 tankers did find themselves in the ironic situation of fighting Finnish Vickers Mark E tanks, mostly a Finnish variant of the Type B variant with a 37mm antitank gun, but Soviet reports stated that the T-26s came out the winners in most cases. Nevertheless the Finns still wound up with sufficient captured T-26 tanks to arm their own forces with several companies of them.

The last factory modification to the T-26 came after the battles with the Finns, who also were adept at both using 'Molotov cocktails' and getting their artillery to air burst over the vulnerable air intake grille for engine cooling. The solution was an armoured 'butterfly' cover over the grille area with side intake vents to prevent damage from artillery fragments or entrance of burning fuel into the engine bay area.

The T-26 was built until late 1940, but after the beginning of the war between 100 and 140 more tanks were built at Factory No. 174 from spare parts and existing components. Others were converted or assembled from damaged or unserviceable hulls sent back for rebuilding. Also, another handful was built at the Stalingrad Tractor Factory as almost an afterthought in 1939-40 - the original choice for primary production facility, but in the end over a troubled eight-year course less than 200 T-26 tanks were built there.

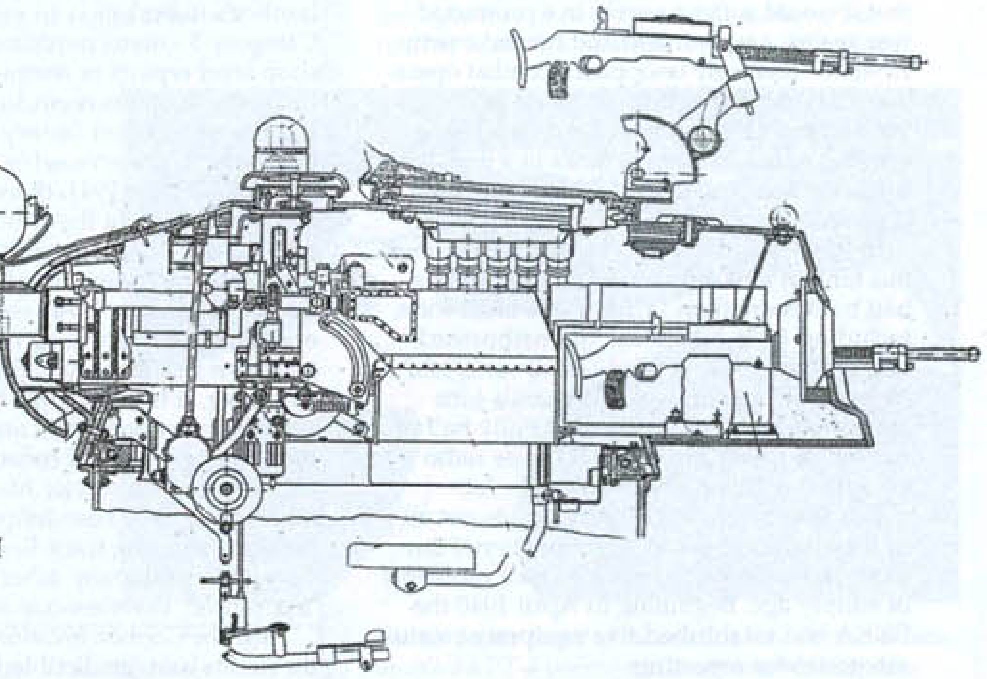


A Model 1936 T-26RT on manoeuvres, with what appears to be part of a Cyrillic letter 'D' on its roof for identification. The tank behind it is a KhT-133 with the turret on the right and flamethrower mantlet. (Collection of Steve Zaloga.)

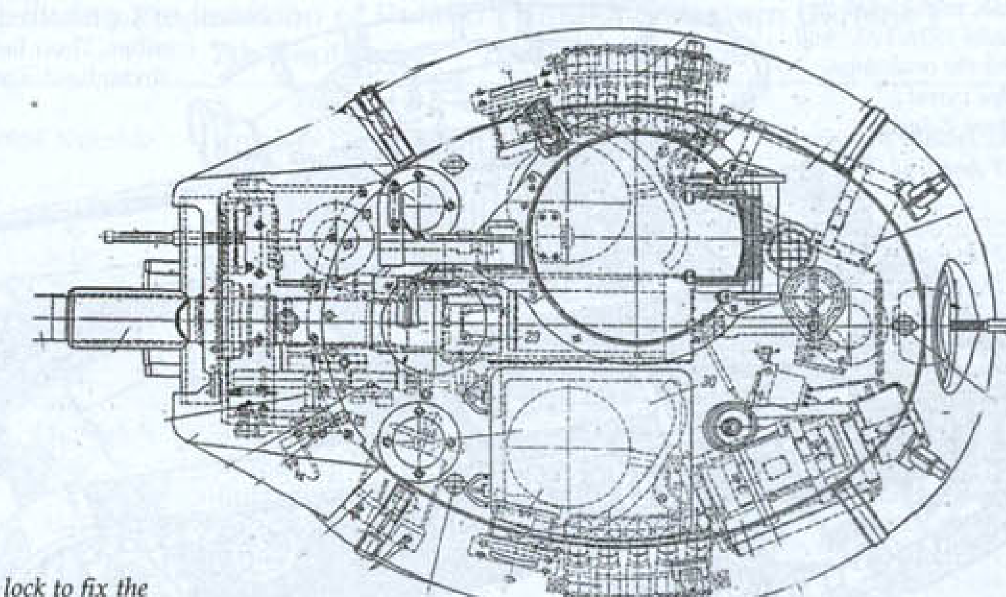
DT 1929

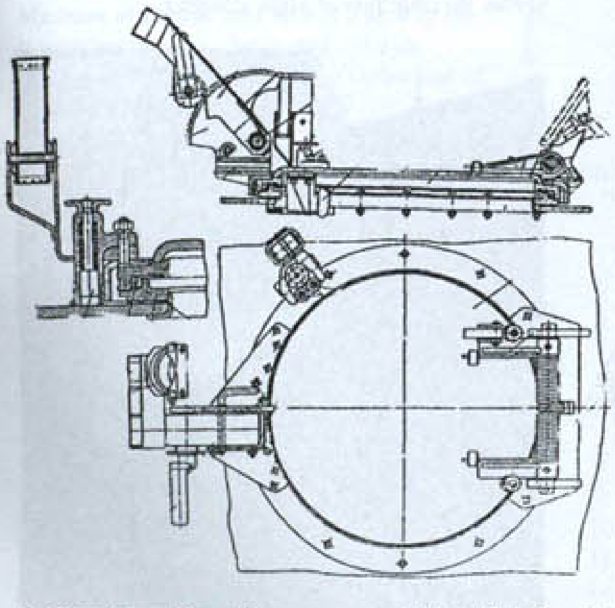
Soviet DT machine guns - the first Model 1929 top and below, the DTM with the return spring rod protruding from the receiver. (Ken Jones.)

DTM

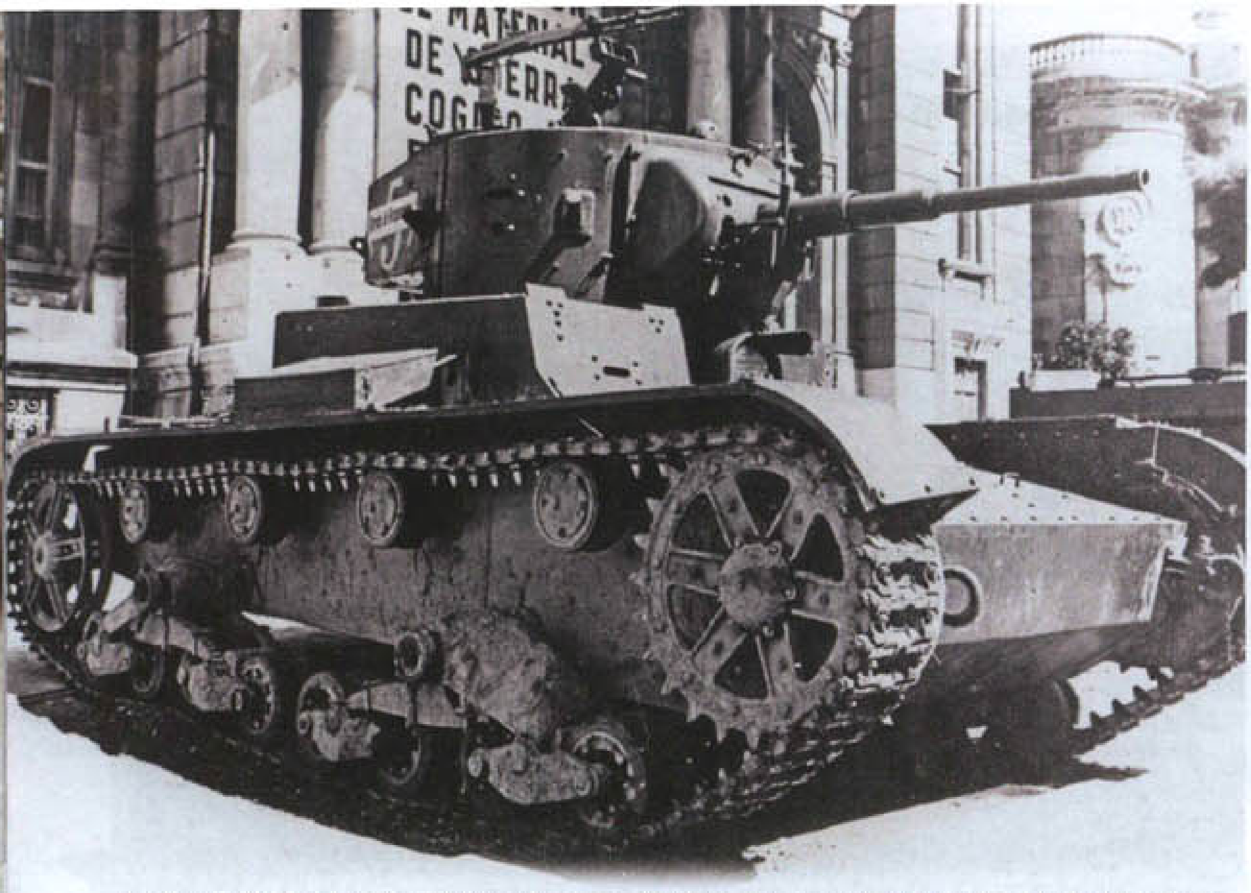


T-26RT Model 1939 turret with all options installed, including the 56-U-322B late model antiaircraft machine gun mount. This tank is fitted with a radio which can just be seen inside the rear of the turret in the top view - (25) is the transmitter, (26) is the receiver. With the rear DT machine gun in place, it must have been - cozy! (Steve Zaloga.)

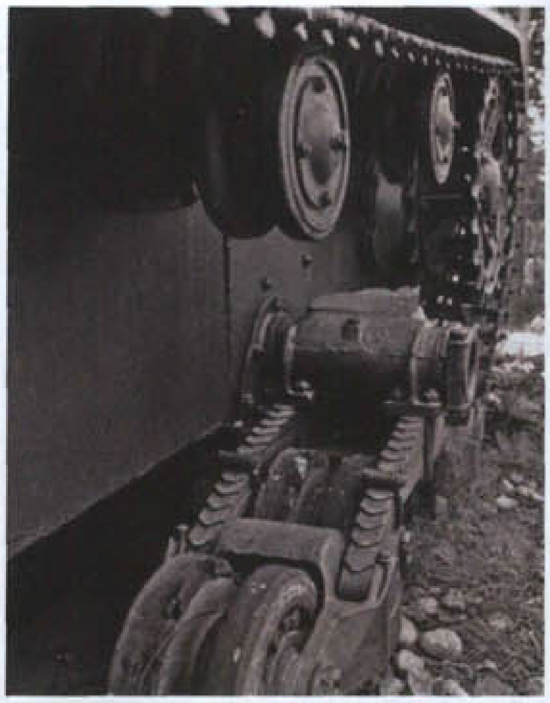




P-40 antiaircraft machine gun mount. Note that there is a screw lock to fix the hatch and cupola in place located next to the fold-down handle on the right side. (Steve Zaloga.)



Another T-26 Model 1936 with the P-40 mount, but this one was equipped as a radio tank at one time; note where the 'handrail' mounts have been cut down and capped off. (Collection of Steve Zaloga.)



Rear of the suspension units. All four were identical and could be reversed or swapped as need be. The leaf spring detail is of interest. (Collection of Steve Zaloga.)

June 1941: Too Long in the Tooth!

Even during the short periods of combat operations with the T-26 it was becoming obvious that it would suffer severely in a protracted war against a well-armed and trained enemy. Even in a relatively unopposed combat operation such as the invasion of Poland in September 1939, a number of mechanical failures, up to one-half of the tanks in a unit, were considered the norm. (See Tables 4 and 5 for representative numbers.)

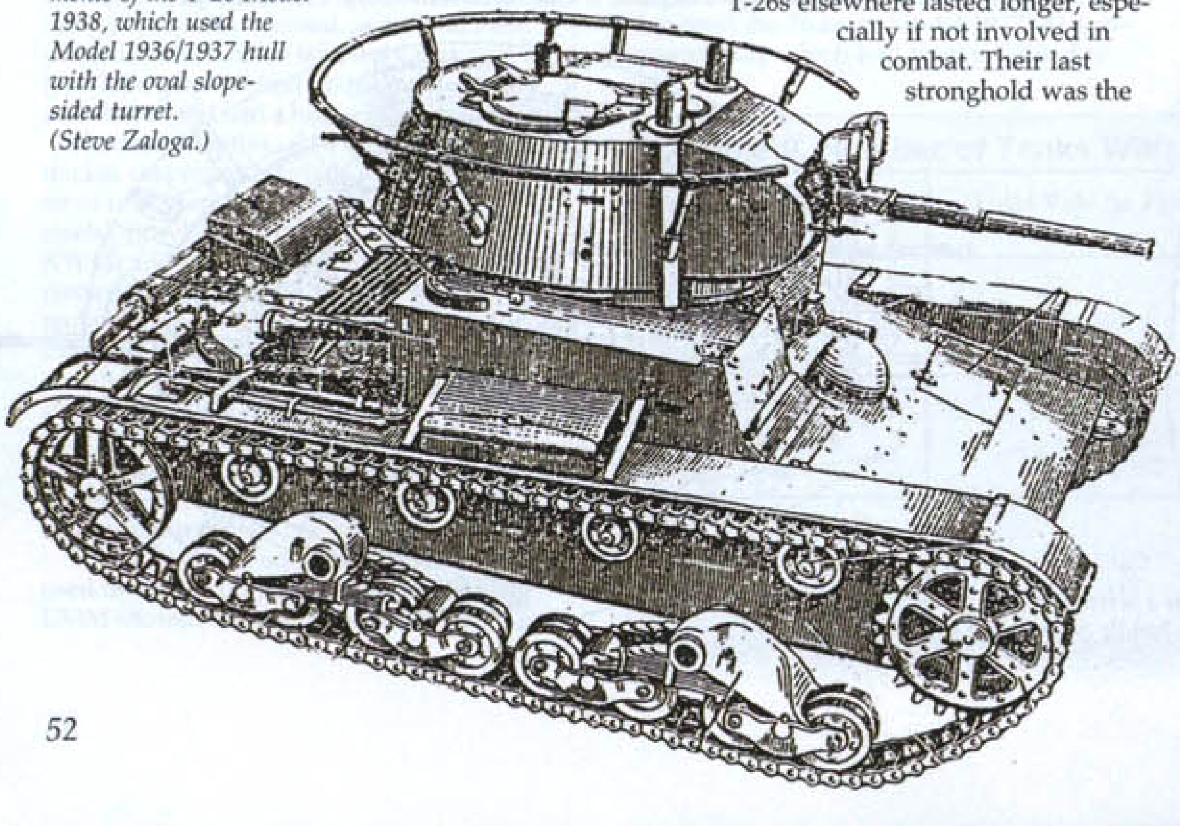
In June 1941 the T-26 was the most numerous tank in Red Army service. The Soviets had built more than 11,200 T-26s of all sorts, including 1,336 'Chemical' (flamethrower) tanks, 65 engineer versions of all sorts, and 28 'teletank' sets of two T-26 chassis (one remote control, one controller.) Fully half of the 'single turret' tanks (4,034) were radio equipped with a 71-TK-3 HF radio set.

But there was a slight problem, as not all of these tanks on hand were functional due to wear, breakdowns, maintenance problems or simply age. Beginning in April 1940 the RKKA had established five equipment status categories for reporting:
Category 1 - new equipment, not previously in use, fully ready for operation and technically acceptable;
Category 2 - in service, fully ready for operation, may need normal repairs or servicing (author's italics);
Category 3 - items requiring district workshop level repairs or maintenance;
Category 4 - items requiring central workshop or production factory repairs;
Category 5 - unserviceable items.

As of 1st June 1941, there were 4,875 T-26s of all categories in the western military districts of the USSR - roughly one-half of all of them built; 828 were listed as Category 1, 3,339 in Category 2, 709 were listed as non-operational due to being in Category 3 or 4, and none in Category 5. But of that Category 2 number, it is not known how many were actually functional. 30% may have been early models (e.g. pre-1934 construction) and having only limited service life left, and many others may have been inoperable due to dead batteries, missing track links, broken suspension units, and many other items considered 'troop-level' maintenance and repair items.

After the German invasion on 22nd June 1941, the results were predictable. Out of those 4,875 tanks on 1st June 1941 most were gone by the beginning of winter. For example the Western Front had 298 T-26s tanks on 1st October 1941. By 28th October only 64 were left, and 14 of those were non-operational and under repair.

T-26s elsewhere lasted longer, especially if not involved in combat. Their last stronghold was the Far Eastern Military District, where they lasted until September 1945 and did take part in the battles with the Japanese at that time. All but a few 'gate guards' were scrapped after WWII.



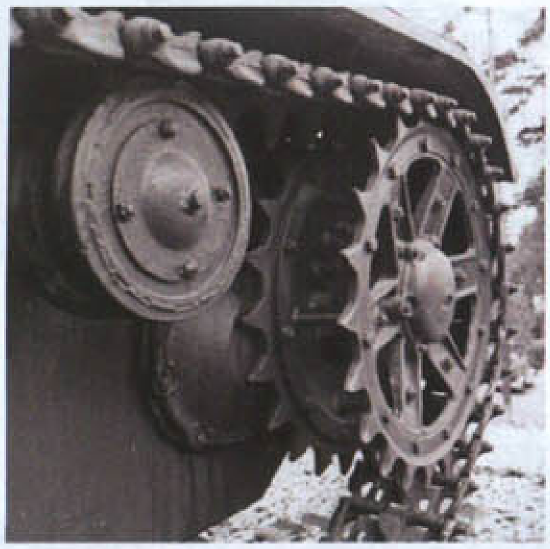
An overview of the external fittings and arrangements of the T-26 Model 1938, which used the Model 1936/1937 hull with the oval slope-sided turret. (Steve Zaloga.)

The T-26 - An Assessment: What Went Wrong?

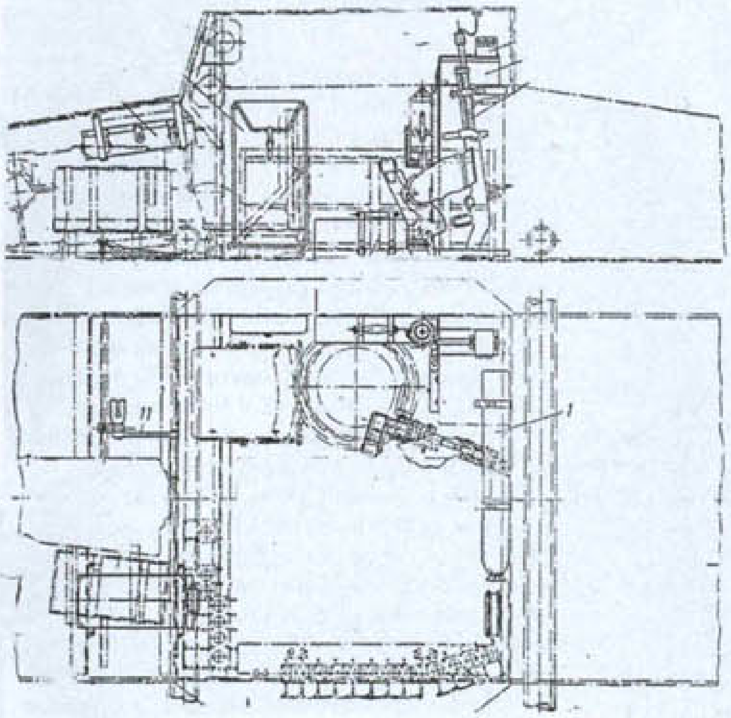
Unlike many of the tanks to follow, the T-26 did not suffer from the pangs of political shenanigans and 'clans' pushing this or that model as a favourite, no matter what its true capabilities. It was accepted for what it was, which was the first modern infantry cooperation tank designed for use with the Red Army.

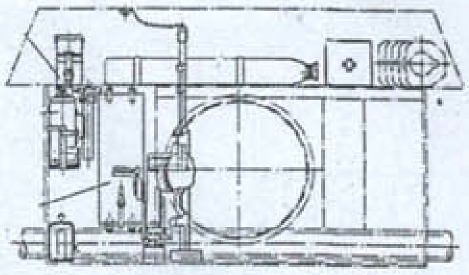
Operationally, the tank was more reliable than the Soviet tanks of that day, but that is not saying much. It was slow (top speed on the highways was no more at best than about 31 kph, or 20 mph, and 16 kph or 10 mph cross country), short-legged (range was up to 240 kilometres on highways, 140 cross country) and thinly armoured (13-15mm in early models, 15-20mm in late models). It did carry

BELOW: The right rear of the turret decking, showing the hatch used for both ventilation and 'bombing up' by loading ammunition into the tank. This tank has two stowage bins on the right fender, but the rear one is probably a Finnish modification. (From the collection of Steve Zaloga.)



The drive wheel and final drive section of the T-26 Model 1936. The stabilization bolts between the toothed disks are unique as I have never seen them on any other tank, but are poorly represented on all of the kits as simple straight plastic pins. Also note the rubber tyre on the return roller is just about worn away. (Collection of Steve Zaloga.)





Spare parts and general internal stowage in the T-26-1 Model 1939 tank. This tank has a bit more room than the 'straight-casemate' T-26 tanks and uses it for a bit of extra stowage. (Steve Zaloga.)

rounds (40 fewer in radio-equipped tanks) and 3,654 rounds of machine-gun ammunition packaged in 58 x 63-round magazines for the DT guns. The 45mm gun fired one of three types of rounds - high-explosive fragmentation, armour-piercing, and canister for use against infantry attacks.

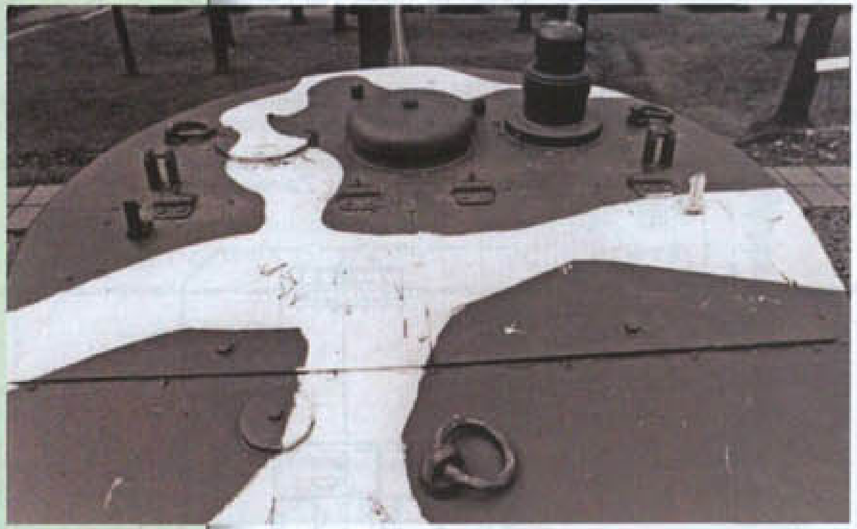
The T-26's 45mm gun was unfairly dubbed the 'sparrow shooter' by some authors, but neither Soviet nor German records bear that

Table 4. Problems Suffered by T-26 Tanks from the 26th Light Tank Brigade during the Invasion of Poland ('Retaking Eastern Ukraine') 7th September - 7th October 1939

Line Strength - 220 T-26 tanks of all types, 7 "BKhM-3" (T-26 chemical tanks)

Reasons for Failure/Repair	Number of tanks affected
Rubber separated from road wheel	21
Clogged fuel line	17
Clogged oil filter	14
Damaged valve seats	10
Carburettor butterfly valve shaft snapped	8
Broken suspension spring	8
Track tensioning dog snapped, thrown track	7
Snapped tachometer cable	7
Shattered idler wheel	7
Snapped main clutch pin	5
Engine ate one or more valves	5
Burned valve seat	5
Broken valve spring	5
Blown muffler	5
Burned up clutch plate	3
Broken intake valve	3
Fuel tank sprang a leak	2
Fan nut stripped, blades damaged fan tunnel	2
Bogie snapped	2
Bogie frame snapped	2

Note: All tanks repaired in the field. 40 tanks needed running repairs, 18 needed new engines, and 52 needed engine repairs.

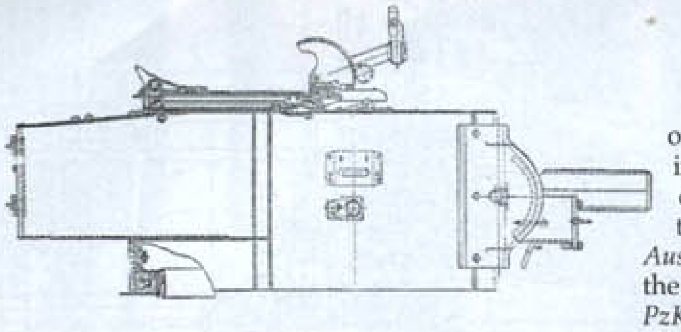


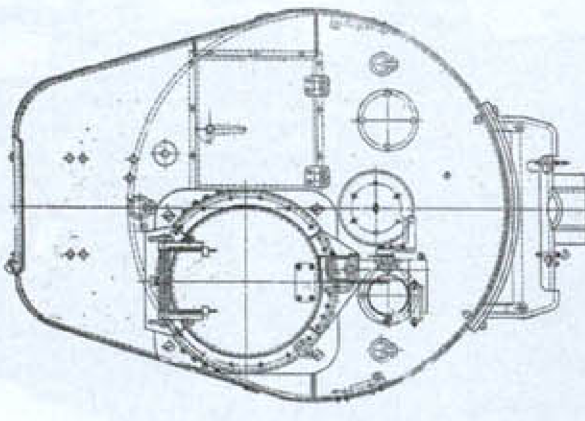
The roof of the turret of the Model 1936. The Finns have installed a PT-4 periscope over the loader's seat. Also, note the hatch cover locks, which appear to also have been added by the Finns. (Collection of Steve Zaloga.)

The Finns have several T-26s in their Museum at Parola, and here is a shot of the transmission access hatch and left side stowage bin on a Model 1936. (Collection of Steve Zaloga.)

Table 5: Accidents Resulting in Tank Losses, 26th Light Tank Brigade, during the Invasion of Poland ('Retaking Eastern Ukraine') 7th September - 7th October 1939

Number	Serial Number	Problem Precipitating Accident	Probable Model and Year of T-26 Tank Lost
1	655	Fused bearing	Model 1932
2	3842	Fused bearing	Model 1935
3	2965	Snapped Shaft to Drive Wheel	Model 1934
4	271	Fused rod bearing for cylinder no. 4	Model 1932
5	196	Engine crankcase shattered	Model 1932
6	2897	Burned up cylinder no. 4	Model 1934
7	906	Burned up cylinder no. 2	Model 1932
8	757	Burned up cylinder no. 2	Model 1932
9	3349	Burned up cylinder no. 4	Model 1934
10	827	Burned up cylinder no. 3	Model 1932
11	3340	Fused the bearings for piston rods nos. 1 and 3	Model 1934
12	319	Fused bearing	Model 1932
13	7779	Burned up cylinder no. 4	Model 1939



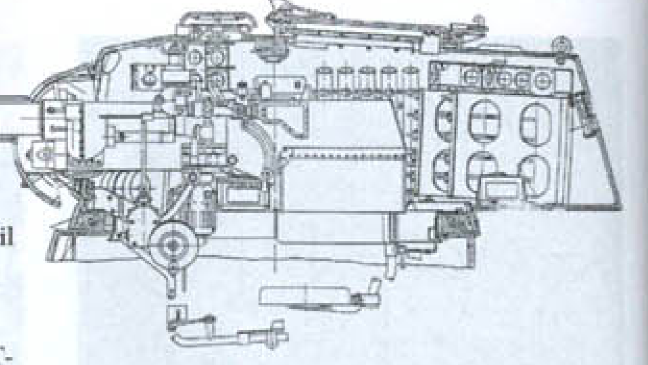


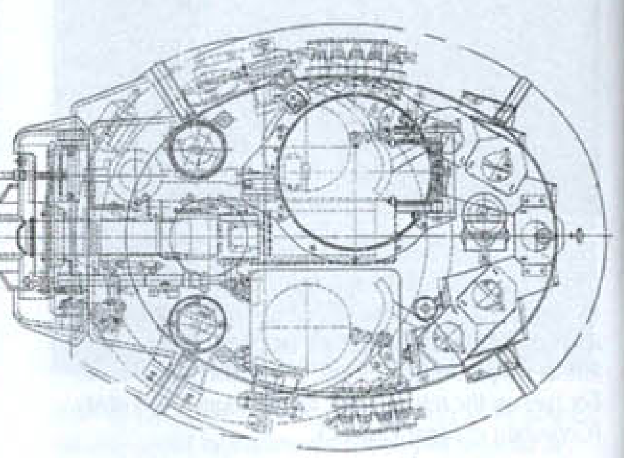
Standard T-26 cylindrical turret adopted in 1933 with the P-40 antiaircraft machine gun mount installed. (Steve Zaloga.)

out. They note its armour-piercing ammunition was sufficient to deal with any German tank up to the *PzKpfw III Ausf H* and *PzKpfw IV Ausf E* at combat ranges, and it was not until the arrival of the *PzKpfw III Ausf J* and *PzKpfw IV Ausf F* models that their tanks could have assured protection from all frontal aspects. The main drawback to the T-26's gun was its poor sights, which were difficult to use accurately beyond 750 metres.

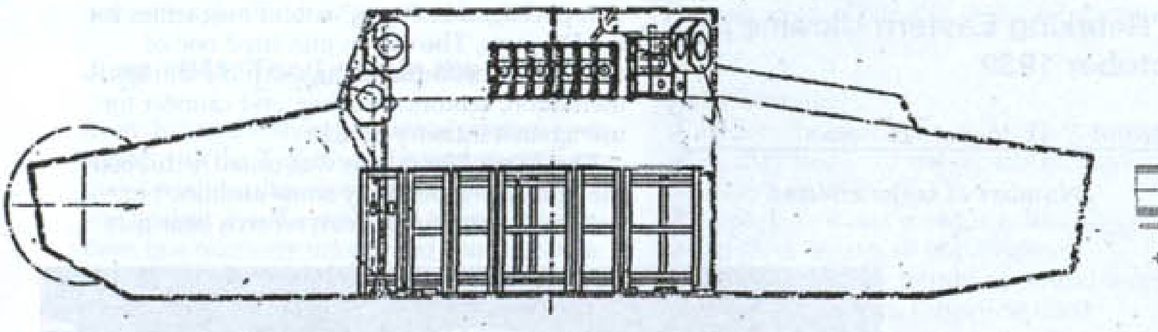
The T-26 was also one of those tanks in which the commander also had to function as gunner, and that was proven early on to be a death sentence in most tank battles as he could not both see to designate targets and engage them. The Germans, who had dedicated commanders in all their tanks, easily coordinated and picked off the Soviets who could not coordinate an effective defence.

The Soviets were also prone to reorganize their forces on a whim, and many commanders - having got used to having a force of

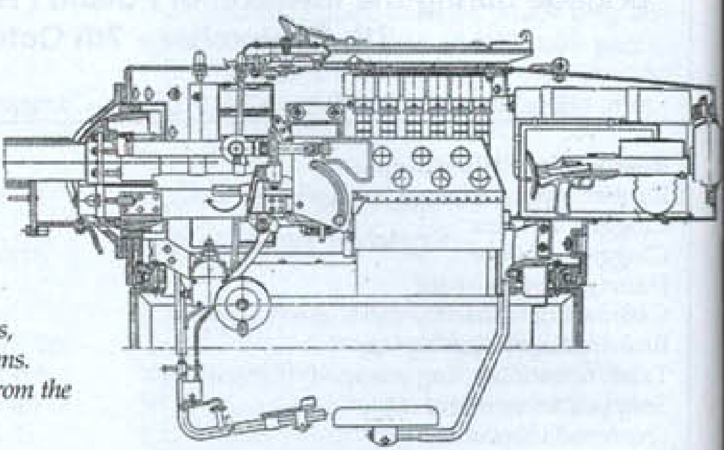


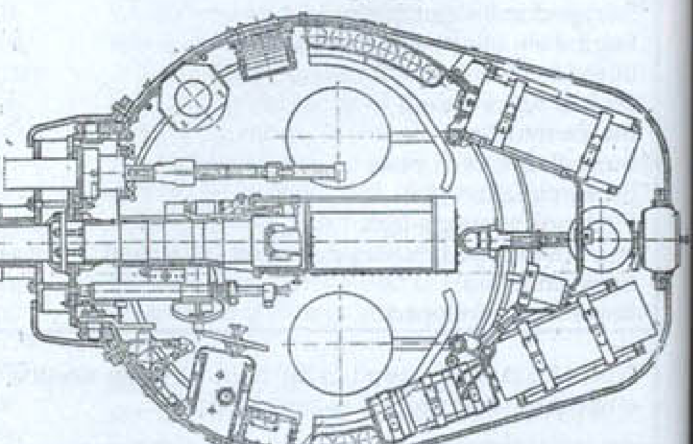


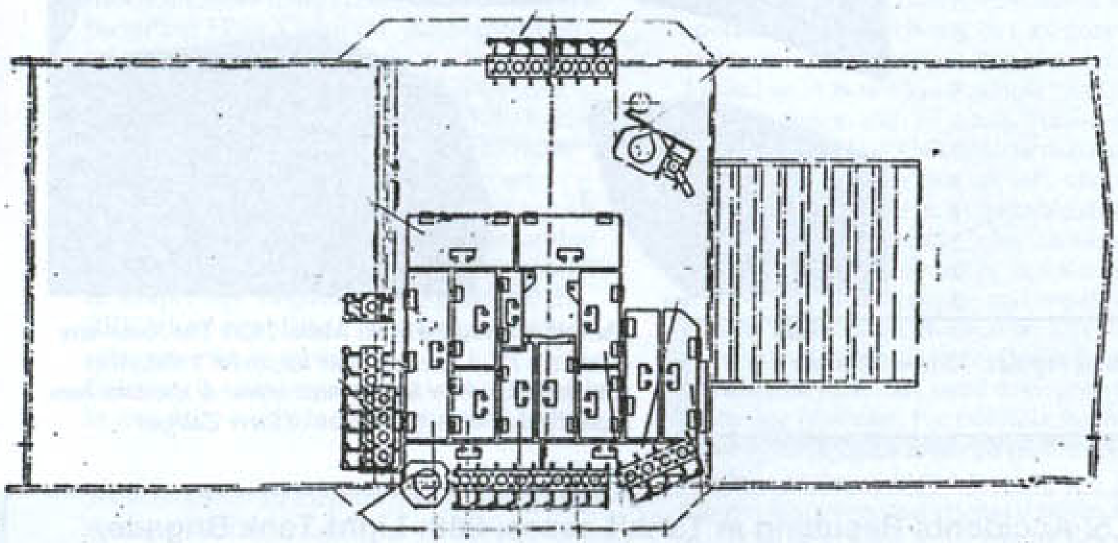
T-26-1 Model 1939 line tank with normal stowage. Compare this schematic with the one for the T-26RT Model 1939. (Steve



Cutaway of the T-26-1 Model 1939 showing ammunition stowage. The boxes each contain 45mm rounds, and the brackets with round openings are for holding loaded 7.62mm DT machine gun ammunition drums. The 45mm ammo boxes formed the 'floor' of the fighting compartment; the crew sat in seats suspended from the turret and had no basket or rotating floor. (Steve Zaloga.)

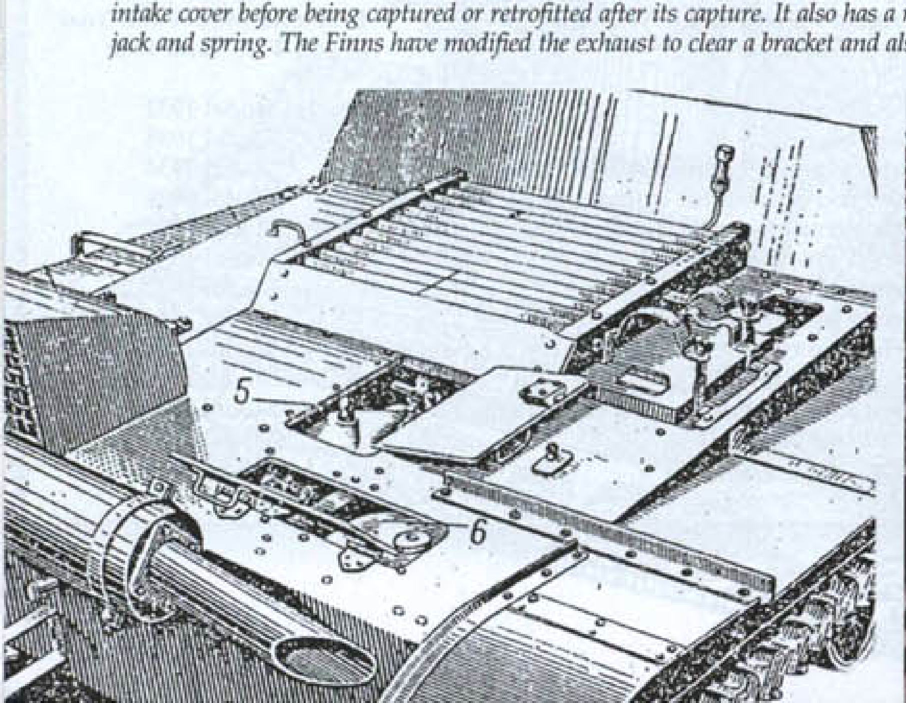


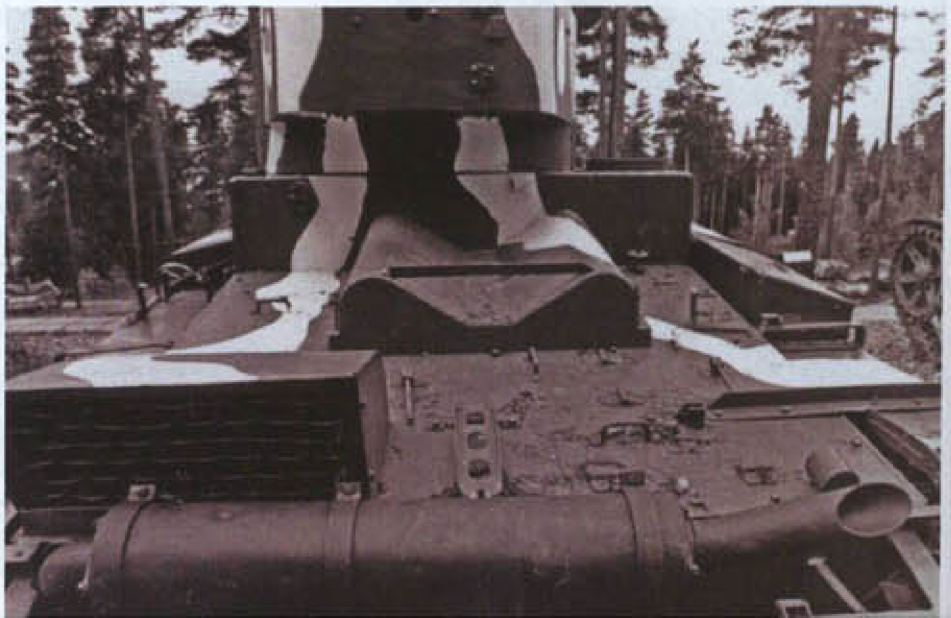


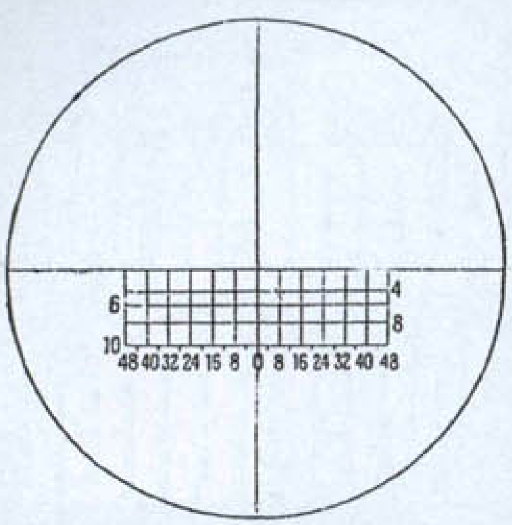


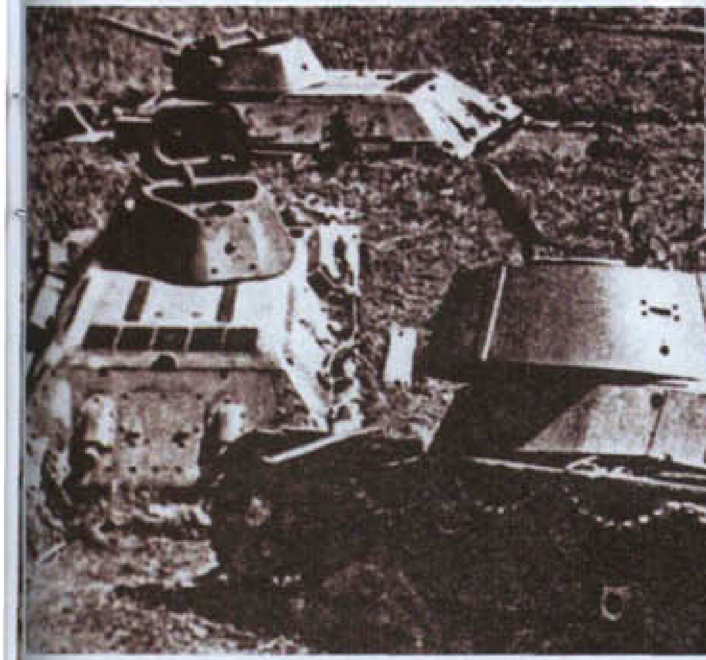
The T-26RT turret used on most tanks but with the late model rear facing DT machine gun mounted. The radio (14) & (15) again makes it a tight fit to operate the rearward firing gun. (Steve Zaloga.)

BELOW LEFT: Engine deck of late model T-26s. (4) & (5) are access ports to check and adjust components, and (6) is the access to the fuel and oil tank filler nozzles. (Steve Zaloga.) BELOW RIGHT: The Finns modified the T-26s over their years of service, but this one appears to have either been fitted with the 'butterfly' air intake cover before being captured or retrofitted after its capture. It also has a more substantial mesh in the exhaust intake. The spare track links are missing, as is the jack and spring. The Finns have modified the exhaust to clear a bracket and also added a bracket between the lobes of the 'butterfly' cover. (Collection of Steve Zaloga.)

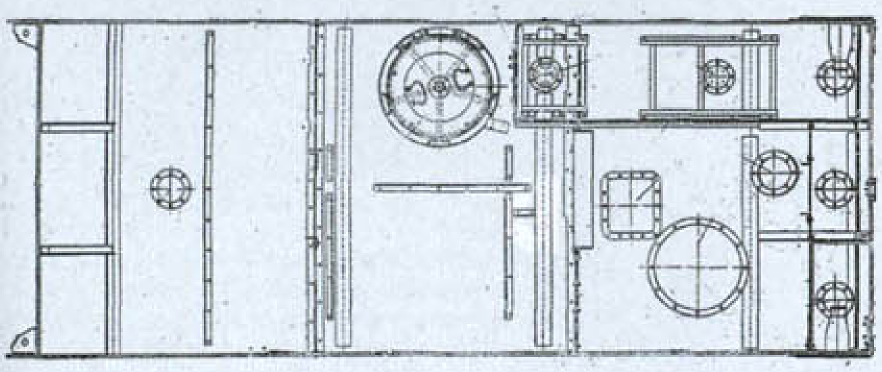




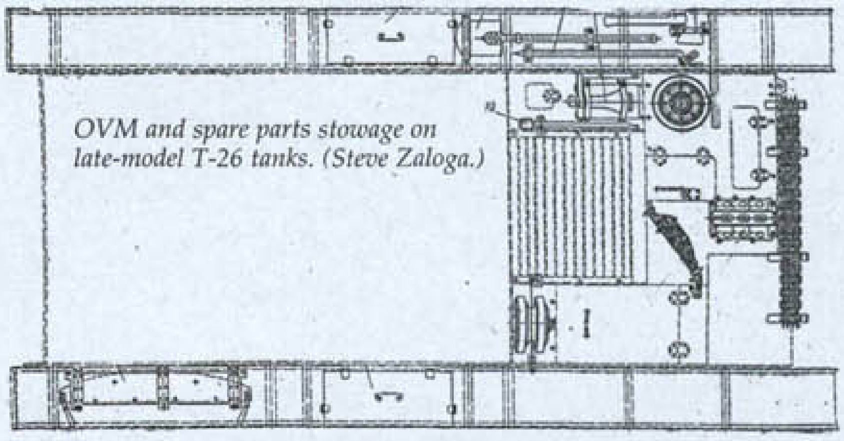




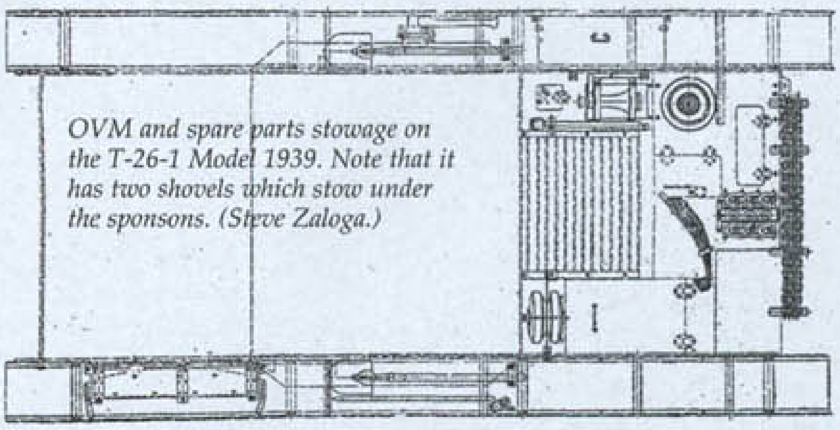
TOP LEFT: The reticule from the TOP-1 tank telescopic gun sight, showing why it was ineffective. The side numbers are for shifts in elevation to get out to given ranges (400, 600, 800 and 1000 metres) and the numbers across the bottom are for compensation to hit moving targets traversing the front at speeds of up to 48 kph. As noted, with the low calibre of Soviet optics, it was virtually useless beyond 750 meters. (Steve Zaloga.) ABOVE: A Model 1937 radio tank, knocked out by the Germans during the invasion of Russia in 1941. This one carries rope on the front, but has its left fender missing, so no idea if the switch was due to the loss of the fender or standard unit level instructions. (Collection of Steve Zaloga.) LEFT: The Model 1939 fared no better than any other T-26, or in many cases any other Soviet tank, against the German invasion. Here a Model 1939 lies knocked out with the tanks of a T-34-equipped unit. (From the collection of Steve Zaloga.)



ABOVE: The belly of the T-26 tank (the same for nearly all variants from the inside with front being to the left. The emergency exit hatch is right in front of the mount for the driver's seat. Access ports for servicing the engine and draining the various components of fluid are at the right. (Steve Zaloga.)



OVM and spare parts stowage on late-model T-26 tanks. (Steve Zaloga.)



OVM and spare parts stowage on the T-26-1 Model 1939. Note that it has two shovels which stow under the sponsons. (Steve Zaloga.)

great size and power, were loathe to part with assets that they 'owned.' There is some anecdotal evidence that many of the tanks in Category 2 status had parts removed from them on purpose to prevent transfer until they were 'repaired' or made 'operational.' Alas, many of them were in the forward areas, and the commanders were unable to actually get them operational again in time to engage the invading German forces in June 1941. This also tends to give a skewed view of the abilities of the poor little T-26.

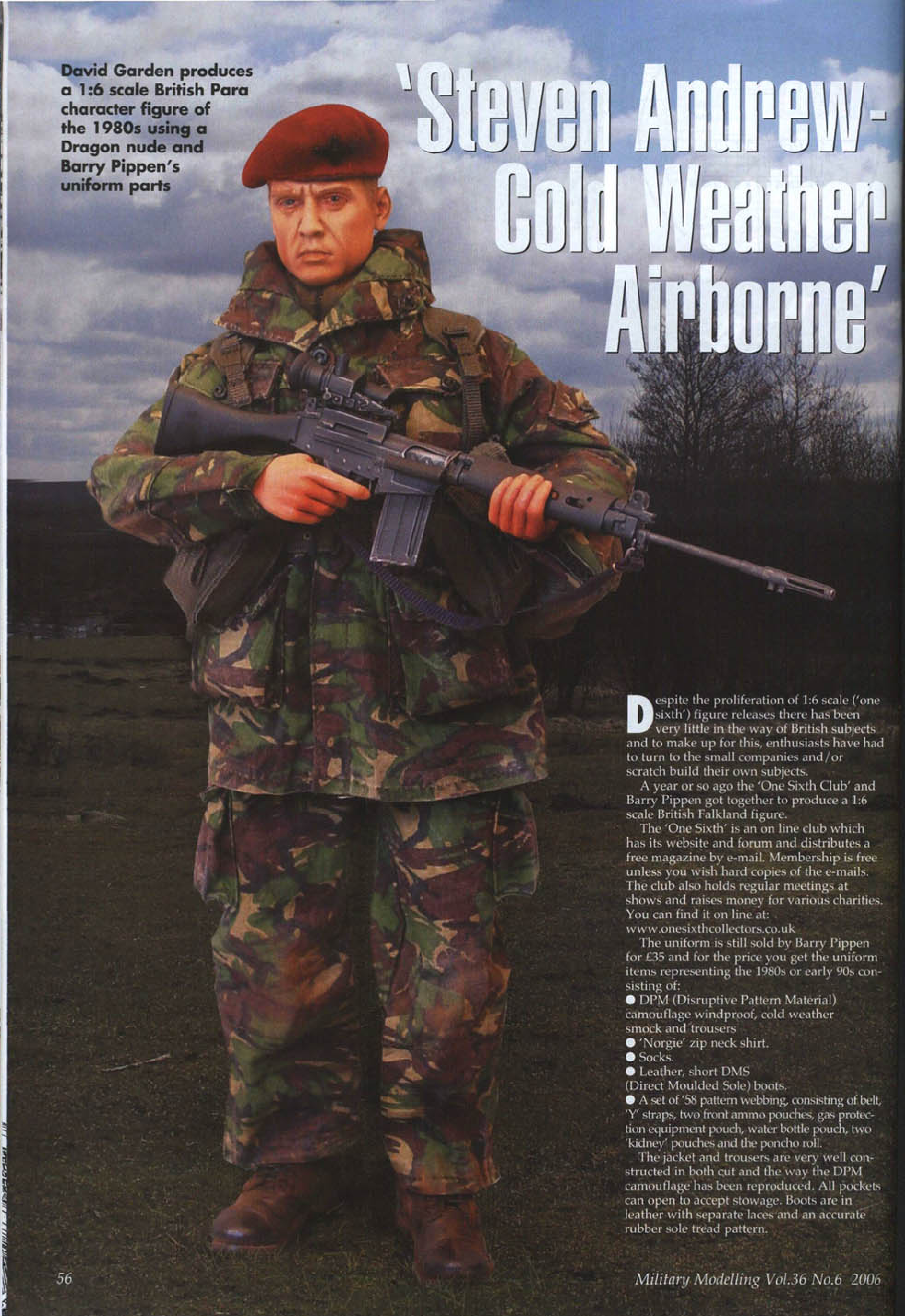
The bottom line was that while the T-26 was a good infantry tank and capable tank destroyer in its day, it was not a good combat tank if it had to slug it out with other tanks over a protracted period of time. Combat reports indicate it did well against the Japanese in the Far East and against enemy light tanks (mostly like the CV3/33 or PzKpfw. I class vehicles) or infantry, where its canister round was very effective at breaking up enemy charges. ■

LEFT: The Model 1939 in the Parola Museum has the jack brackets on the rear deck. Note the tail light under the right rear of the turret. (Collection of Steve Zaloga.)

Next issue: 'Sorting out' the different marks of the T-26 tank and a list of the designations given them by the Germans - Don't miss it!

David Garden produces a 1:6 scale British Para character figure of the 1980s using a Dragon nude and Barry Pippen's uniform parts

'Steven Andrew - Cold Weather Airborne'



Despite the proliferation of 1:6 scale ('one sixth') figure releases there has been very little in the way of British subjects and to make up for this, enthusiasts have had to turn to the small companies and/or scratch build their own subjects.

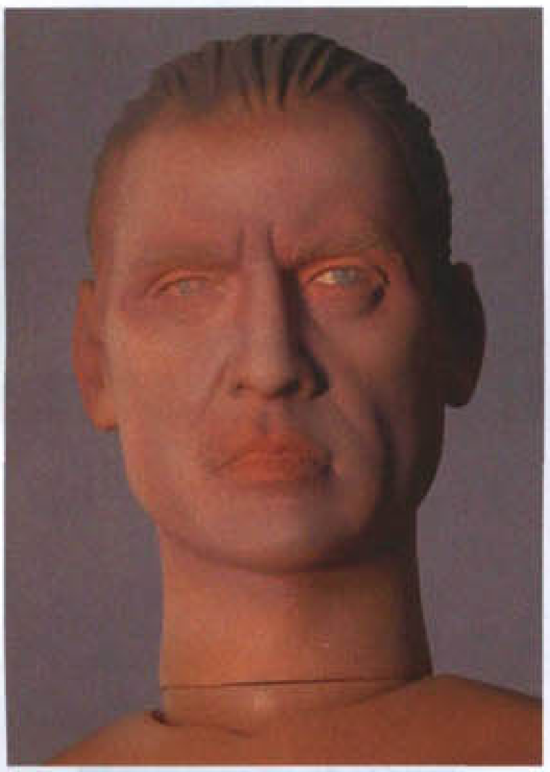
A year or so ago the 'One Sixth Club' and Barry Pippen got together to produce a 1:6 scale British Falkland figure.

The 'One Sixth' is an on line club which has its website and forum and distributes a free magazine by e-mail. Membership is free unless you wish hard copies of the e-mails. The club also holds regular meetings at shows and raises money for various charities. You can find it on line at: www.onesixthcollectors.co.uk

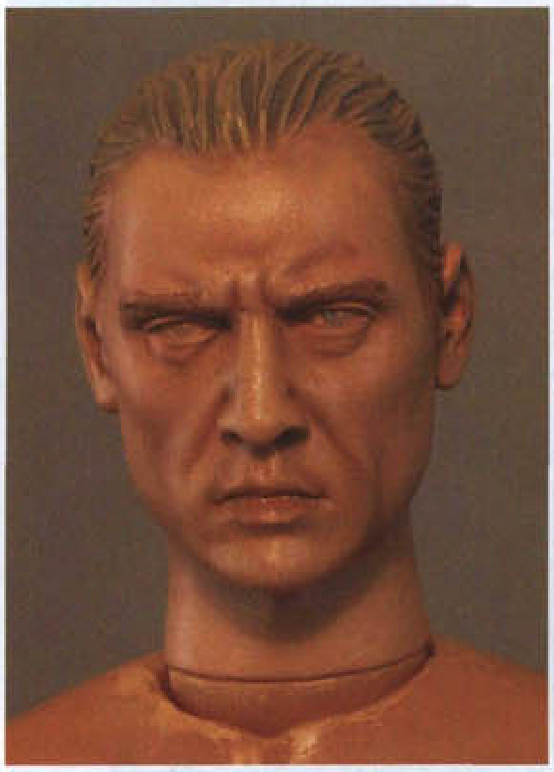
The uniform is still sold by Barry Pippen for £35 and for the price you get the uniform items representing the 1980s or early 90s consisting of:

- DPM (Disruptive Pattern Material) camouflage windproof, cold weather smock and trousers
- 'Norgie' zip neck shirt.
- Socks.
- Leather, short DMS (Direct Moulded Sole) boots.
- A set of '58 pattern webbing, consisting of belt, 'Y' straps, two front ammo pouches, gas protection equipment pouch, water bottle pouch, two 'kidney' pouches and the poncho roll.

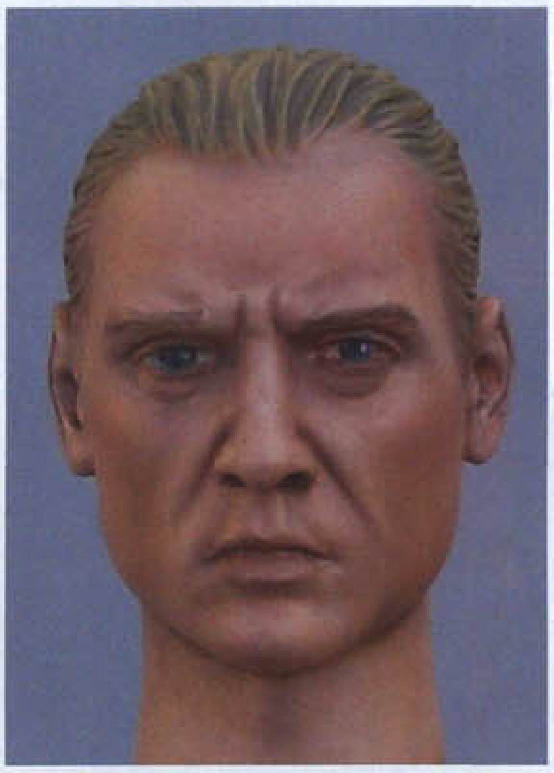
The jacket and trousers are very well constructed in both cut and the way the DPM camouflage has been reproduced. All pockets can open to accept stowage. Boots are in leather with separate laces and an accurate rubber sole tread pattern.



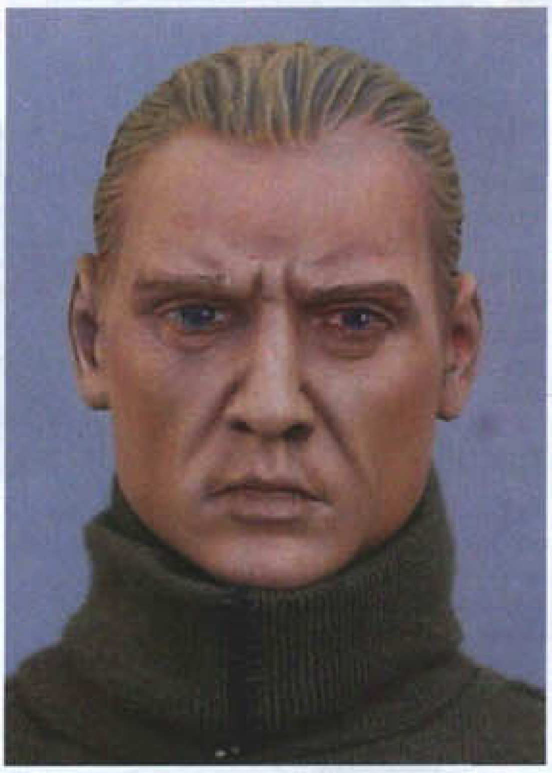
Head after spraying the base coats with the airbrush.



After painting with artists' oil colours - including the hair.



Face after eyes have been painted in. The character stands out.



Repainting completed on the head. There is zip detail on the 'Norgie' woollen jumper, but no working zip. The garment pulls over the head and this keeps the detail to a realistically small level.

Repaint it!

To make my '12-inch Para' I sourced a nude Dragon figure, (again from Barry,) the uniform set I listed in the last section, a Dragon red beret sold on eBay and a 7.62mm SLR rifle (L1A1) sold in the Realistic carded pack.

I set about repainting the figure's face and hands. Some, even more expert than me, declare this a daunting task, but I feel that those of us that paint 1:35 scale faces can surely paint a much larger 'coupon'.

My own technique is not to strip the head as others do, but use the good commercial finish as a start. This may be a comfort for those who are contemplating starting painting faces as many do express concern about this activity. It does help to start on a figure that you are kit-bashing from parts and not a favourite from your collection!

There are probably as many ways to paint faces and skin there are modellers doing it but here is my method. As you will see from the accompanying photos I start by airbrushing a base coat made up from Humbrol enamels: Sand 63, Brick Red 70 and Scarlet 60. The shaded areas are put in first from mix 3:2:1 in that order.

This is followed by a base for the rest of the face mixed 3:1:1 in the same order of paints. A dark base colour is spayed on the hair, in this case Humbrol Dark Brown 170.

After leaving the enamels to dry for at least 24 hours I then paint with oil colours and I always use Winsor & Newton paints as originally recommended to me. They give the best results in any scale.

A base colour is made up from Titanium White, Yellow Ochre, Cadmium Red Hue mixed 3:3:1 for an average 'flesh'. For darker areas more red is added mixed with Burnt Sienna to get the darker effect I want.

Please don't use any product labelled 'flesh' as this can give a pink doll-look to any figure. The only exception being, perhaps, as an undercoat.

I start the face by mixing the darker tone and painting in very dark areas such as under the nostrils, in the ears, etc. Then I lighten this and put in the areas of shadow round the nose, mouth, frown lines and other places. Taking my basic colour I then use something akin to a dry-brushing technique and blend the light and dark areas together so there are no hard areas of colour change, but a subtle variation across the face. The only difference when I work in 1:6 scale is that I use chisel shaped brushes for this part. The best ones I've found are from the Tamiya range (readily available from model shops) 'Tamiya modelling brush No. 0 Item 87015' and 'Tamiya modelling brush No. 01 Item 87028.'

This is then repeated, but by adding white to lighten the mix to get the highlights on the nose, cheekbones ears and anywhere else applicable. 'Easy does it' is the motto and gradual change to build up the effect is required. If you don't like it, wipe the paint off and start again.

Finally, a slight red tone is added to the cheeks by raising the Cadmium Red in the mix to 3:3:2 in the order white, yellow, Ochre:Red. Again take it easy to avoid the dreaded doll-like rosy cheeks!

I like oil paints because the slow drying time gives time to work on the subtle effect I like. There is nothing else I have used that gives the slight sheen that looks like real flesh.

The hair was painted using a similar dry-brushing technique using oil paint Yellow Ochre and Humbrol Desert Sand 250, successively adding more yellow for the highlights.

The lips are finished by a dark line where they meet and a lip colour I can best describe as 'purple flesh'. This is achieved by adding a bit more Yellow Ochre and a touch of Burnt Sienna to the basic flesh mix. Look at your own lips and avoid a colour that looks like the soldier is wearing lipstick! (I didn't want a visit from a deputation from Aldershot!) The Dragon figure's lips seem to be painted an orange colour which I didn't notice until I closely studied the figures' faces. I suppose I have focussed on the uniforms.

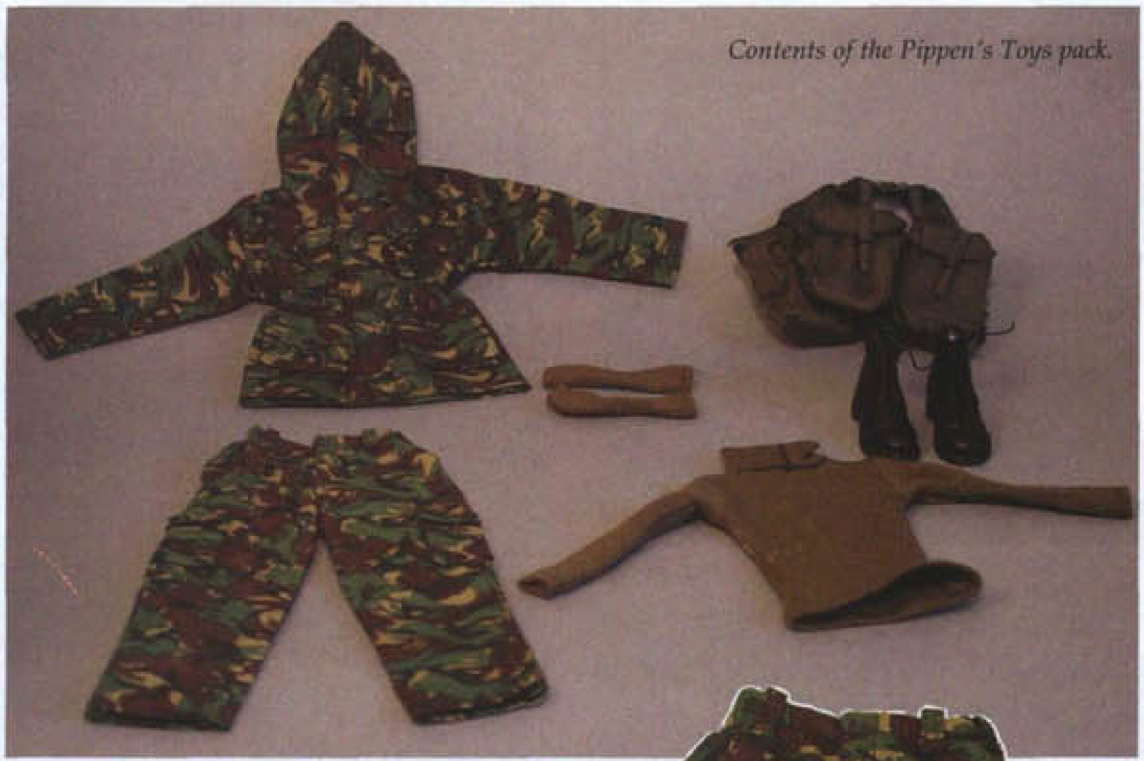
Now the eyes! Yes the eyes have it, the mirror of the soul. Many dread this part, but be reassured they are much bigger than they are in 1:35 scale.

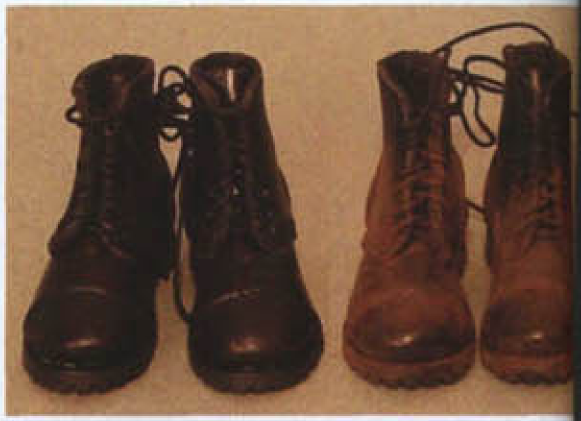
You must start with the white or more correctly, an off-white; add a little blue or grey to the white mix. Alternately as I did here to make a tired effect add a little red. Careful, do not add too much unless you desire a really bloodshot look. I use oil paints, again to get the sheen.

When the white is dry, paint in a black circle for the outside of the iris, then paint the desired eye colour in leaving only a slight black outline. Here I used Humbrol Blue 104 lightened with a little white. When this was dry I painted in small flecks of a lighter blue to enhance the iris. A small black circle is put in the middle for the pupil. Good painters can practice until they get perfect dots with a paintbrush and thinned paint. I simply use a good fine permanent felt pen such as the 'Staedtler' range. This gives just the right size of pupil, time and time again, unless you want a very wide one. A white dot is painted in at 11 o'clock for a highlight.

A red/brown mix is painted in just at the edge and under the top and bottom eyelids and if the eye looks too dry a thin coat of Johnson's Klear acrylic floor polish to make it look moist.

The final result was a rather stern, determined expression, which I liked, and felt summed up the airborne mentality.

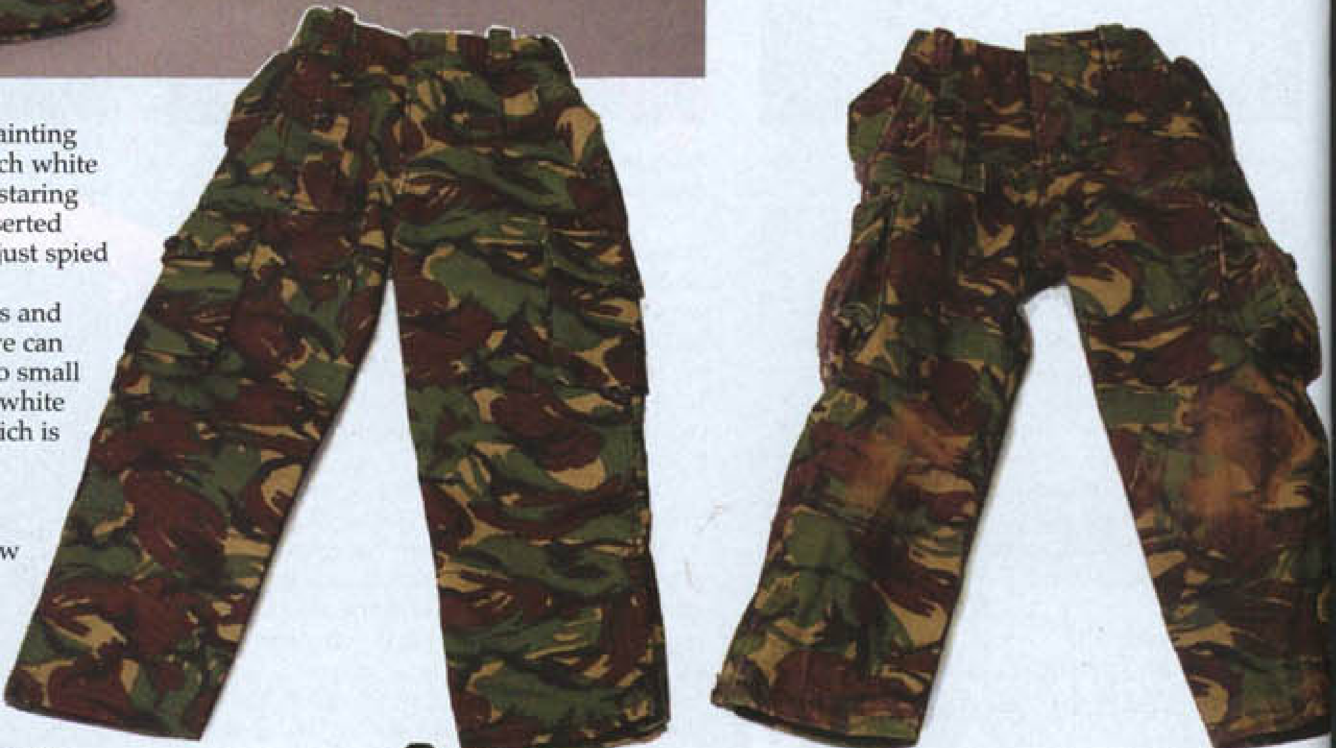

Contents of the Pippen's Toys pack.


Boots - new on the left and dirtied on the right.

Finally a couple of points about painting eyes. I often see figures with too much white showing. This gives an exaggerated staring effect as if a large object has been inserted into a small orifice or the figure has just spied a host of naked adorable women!

The second point is similar, the iris and pupil make up most of the eyeball we can see. Often these are painted in far too small as dots in the middle of the eye and white showing above or below the iris, which is wrong.

I now find myself examining and evaluating real faces in public areas like pubs and on television to see how the face looks in real life. I'm sure people must think I am taking an unhealthy interest in them!


DPM trousers 'before' on the left and 'after' washing, rubbing and 'dirtying' on the right.

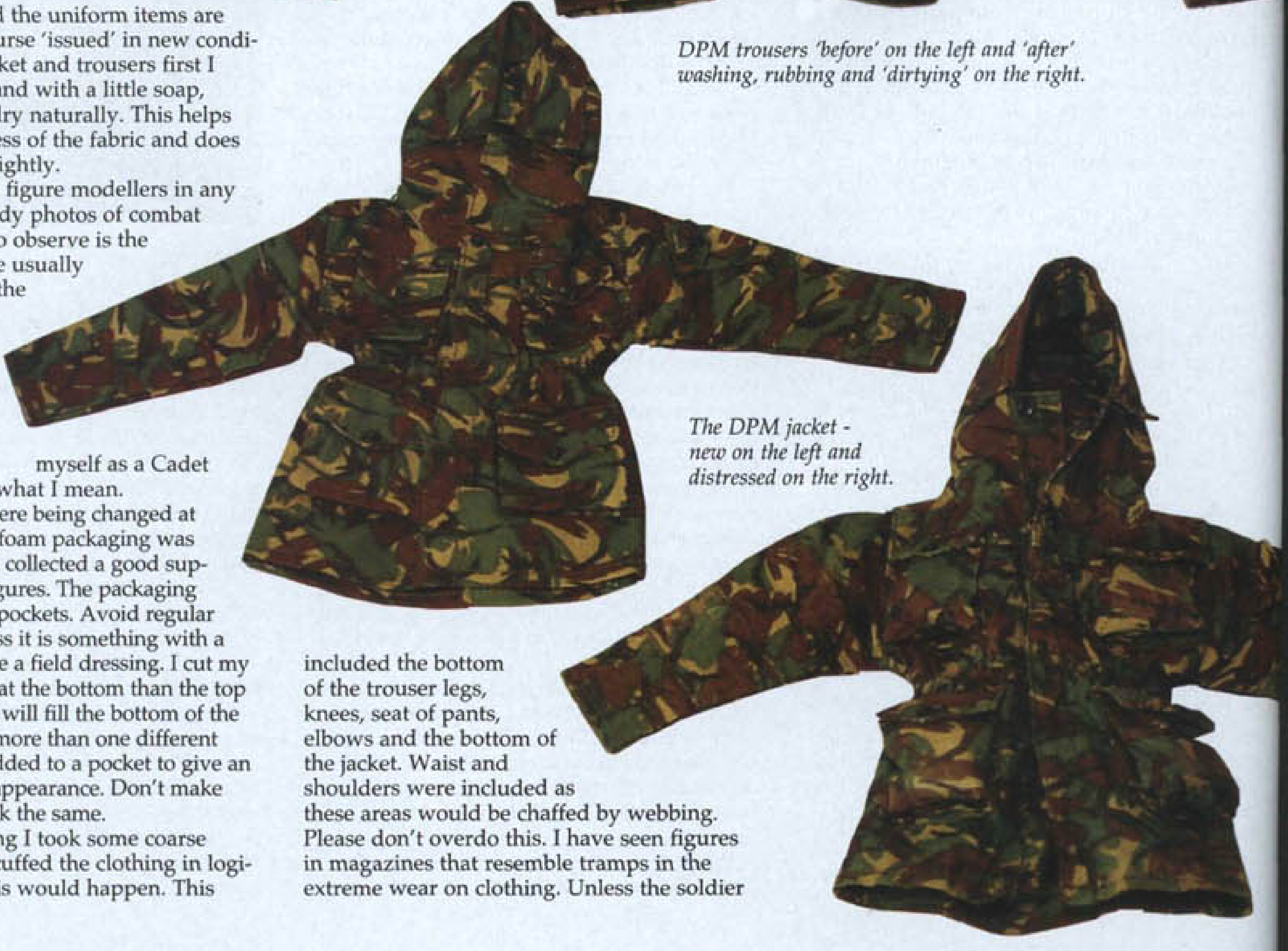
The Uniform

As I've already said the uniform items are excellent, but of course 'issued' in new condition. Taking the jacket and trousers first I washed these by hand with a little soap, rinsed, and left to dry naturally. This helps takes out the stiffness of the fabric and does fade the material slightly.

A tip I give to all figure modellers in any scale - look and study photos of combat troops. One thing to observe is the fact that pockets are usually well filled to carry the necessities of life and often take on quite a bulge. Readers with a service background, (even myself as a Cadet Officer) will know what I mean.

The computers were being changed at work and the black foam packaging was being discarded so I collected a good supply of this for my figures. The packaging cut easily to fit into pockets. Avoid regular shapes though unless it is something with a distinctive shape like a field dressing. I cut my pocket fillers wider at the bottom than the top as the heavier items will fill the bottom of the pocket. Sometimes more than one different shaped piece was added to a pocket to give an even more uneven appearance. Don't make any two pockets look the same.

After pocket filling I took some coarse emery paper and scuffed the clothing in logical places where this would happen. This included the bottom of the trouser legs, knees, seat of pants, elbows and the bottom of the jacket. Waist and shoulders were included as these areas would be chaffed by webbing. Please don't overdo this. I have seen figures in magazines that resemble tramps in the extreme wear on clothing. Unless the soldier

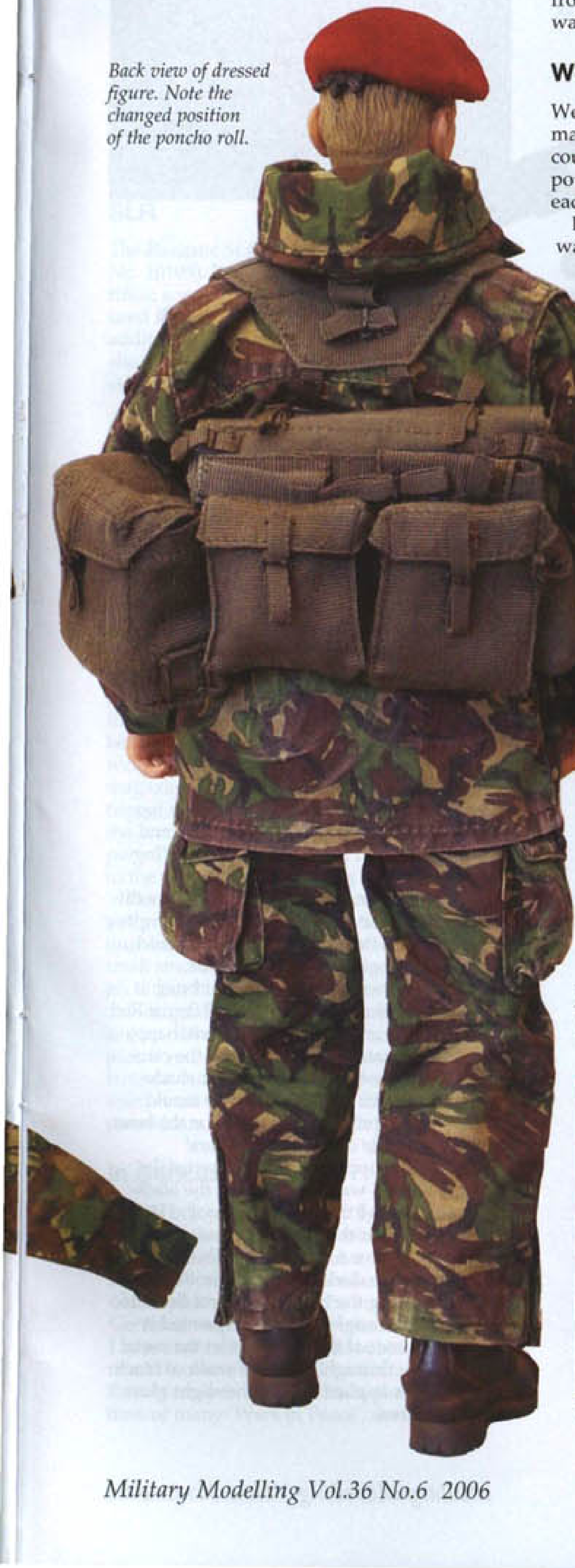

The DPM jacket - new on the left and distressed on the right.

had been in the line for an excessive time or cut off in a battle 'pocket' I do not feel that the excessive wear is realistic in 20th century subjects when uniforms were renewed fairly often. Earlier periods were different and perhaps a more ragged appearance is justified, but not in the 1980s.

I added Para wings to the upper right arm from the Dragon Falkland's Para 'Graham'. From photos I am not sure if the Paras wore wings on items like windproofs and tropical jackets. Unfortunately the wings fell off and were lost in the 'part eating carpet' half way through the photo-shoot so I'll be right in only half of my photos.

After scuffing I used Mig pigments Dark Mud PO33 and Europe Dust PO28 to dirty up the DPM items, but again made this restrained. Heavy soiling would be appropriate in certain conditions. See photos.

Back view of dressed figure. Note the changed position of the poncho roll.



Boots were dirtied up again using the same Mig pigments, liberally brushed on and then brushed off to leave the 'dirt' in appropriate areas. See photo. The effect I wanted was that of dried mud. I considered scuffing the boots, but felt that good soldiers look after their boots and left them.

I have used paint in the same way; allowing it to dry and then scrubbing the areas with an old toothbrush were it would have worn off. Another method I quite like is to use fine garden earth (the real thing) in the same way. Unfortunately, at the time I was making this figure there were hard frosts in my area and the ground was like concrete.

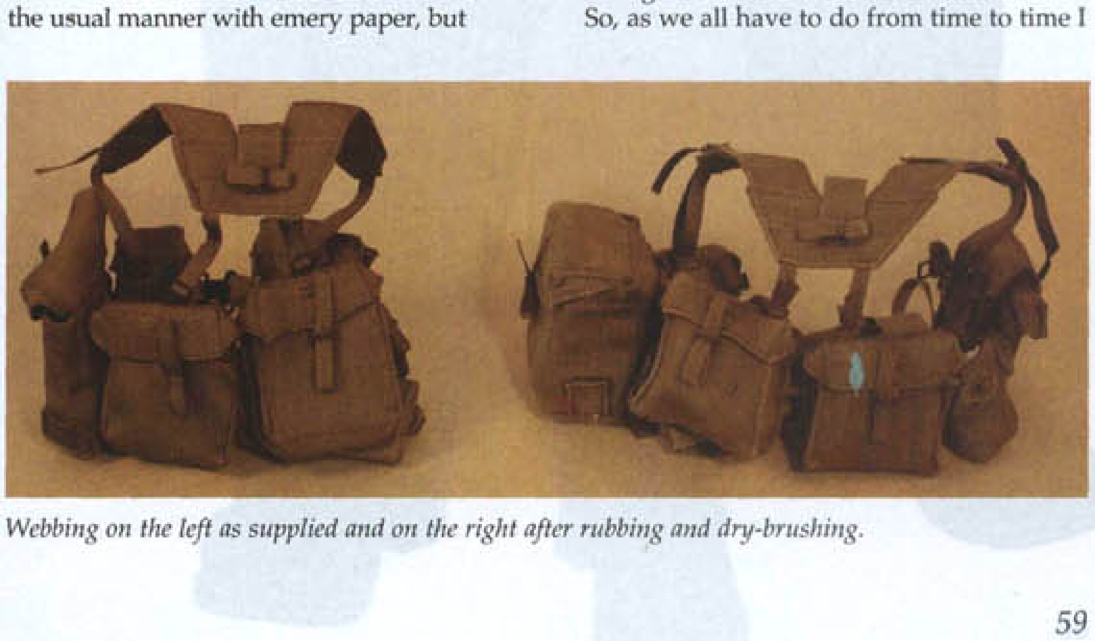
Webbing

Webbing was filled in the same manner as pockets, but shapes could be more regular. Front ammo pouches also got one spare magazine each, which came with the rifle.

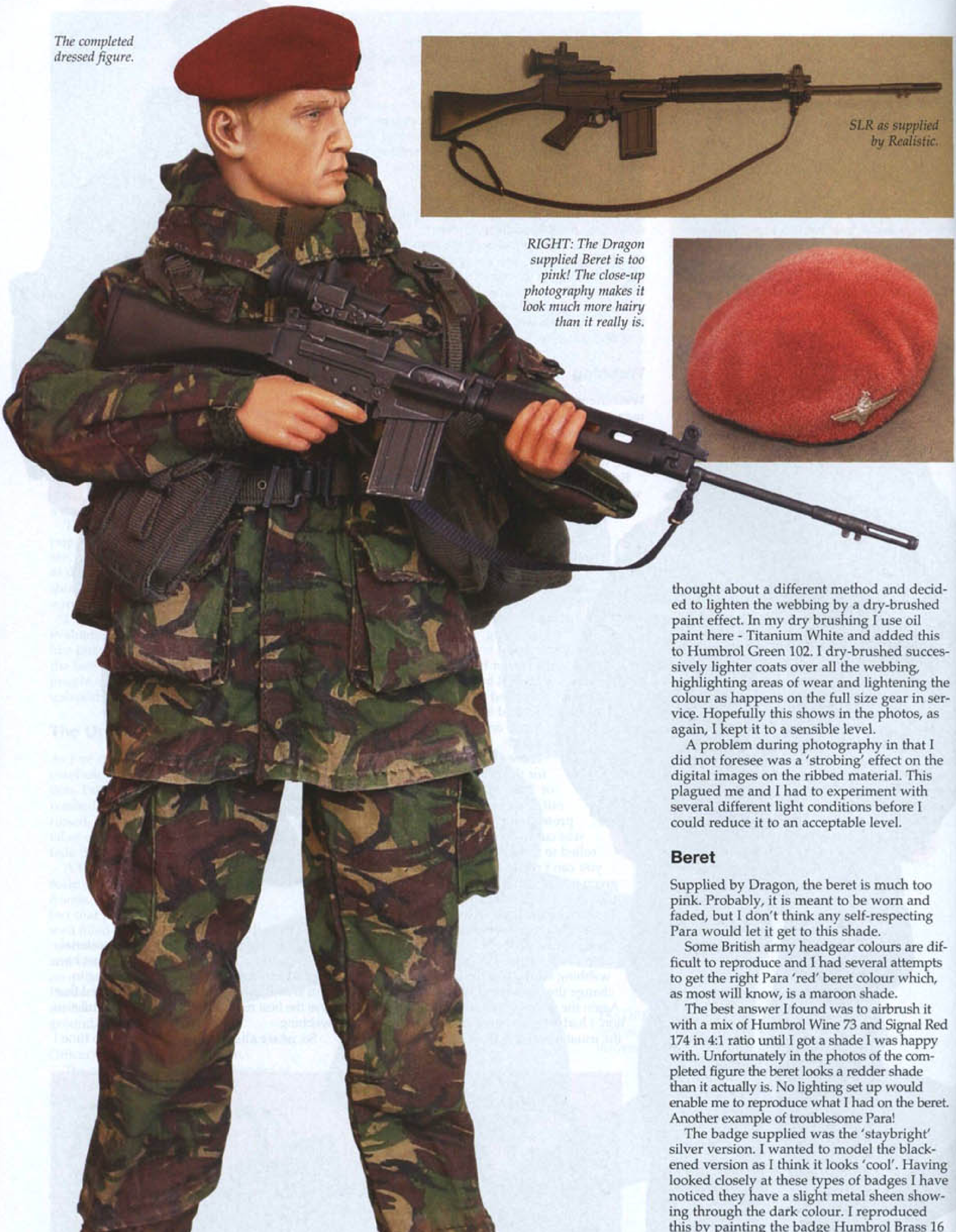
Barry's set does not have a '58 pattern water bottle and cover, but includes a '44 pattern holder. This was preferred by many units particularly elite ones like paras, marines, SAS etc. There is no water bottle supplied so I used a Dragon metal WW2 US item from the US Marine carded set. This is close enough to the '44 pattern bottle as little is seen when in the webbing. The model is metal and is a good weight so the carrier hangs realistically. The SLR bayonet and sheath supplied with the rifle was slotted into the appropriate place on the left hand ammo pouch.

There is no poncho supplied for the poncho roll container, or 'bum roll'. So I made one out of an old piece of personal protection kip sheet I have. This was cut to an appropriate size and rolled to fit in the webbing. Although you can't really see it, the material is a green nylon just like the real poncho. Still with the poncho roll, it was normally worn below the kidney pouches, but some units like the paras wore it above them as they thought it more comfortable when sitting. As the Pippen's Toys webbing works like the original I could change the position of this item easily. Again the webbing is in unissued condition. I had intended to distress the fabric in the usual manner with emery paper, but found even the roughest sandpaper would not wear away the material used. I came to the conclusion Barry must have used Kevlar for these items! On speaking to him after finishing the figure he explained that was the best material to reproduce the full-size webbing.

So, as we all have to do from time to time I



Webbing on the left as supplied and on the right after rubbing and dry-brushing.



The completed dressed figure.

SLR as supplied by Realistic.

RIGHT: The Dragon supplied Beret is too pink! The close-up photography makes it look much more hairy than it really is.

thought about a different method and decided to lighten the webbing by a dry-brushed paint effect. In my dry brushing I use oil paint here - Titanium White and added this to Humbrol Green 102. I dry-brushed successively lighter coats over all the webbing, highlighting areas of wear and lightening the colour as happens on the full size gear in service. Hopefully this shows in the photos, as again, I kept it to a sensible level.

A problem during photography in that I did not foresee was a 'strobing' effect on the digital images on the ribbed material. This plagued me and I had to experiment with several different light conditions before I could reduce it to an acceptable level.

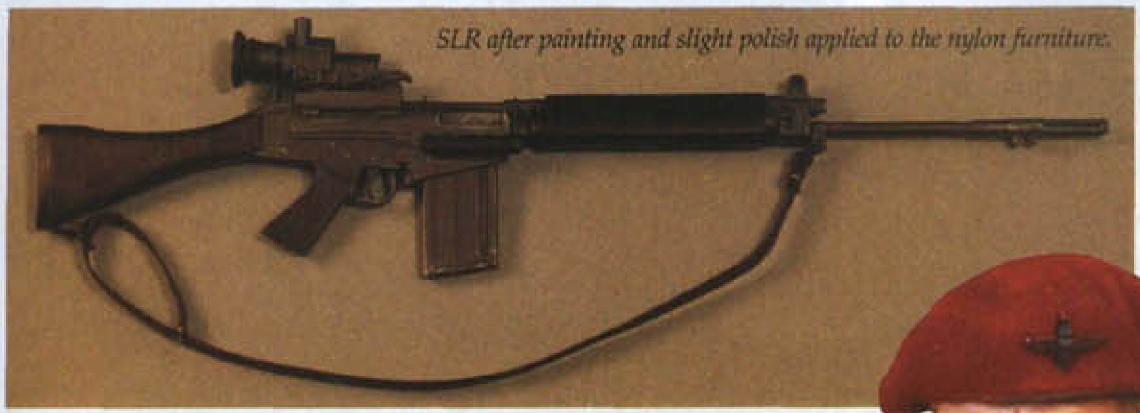
Beret

Supplied by Dragon, the beret is much too pink. Probably, it is meant to be worn and faded, but I don't think any self-respecting Para would let it get to this shade.

Some British army headgear colours are difficult to reproduce and I had several attempts to get the right Para 'red' beret colour which, as most will know, is a maroon shade.

The best answer I found was to airbrush it with a mix of Humbrol Wine 73 and Signal Red 174 in 4:1 ratio until I got a shade I was happy with. Unfortunately in the photos of the completed figure the beret looks a redder shade than it actually is. No lighting set up would enable me to reproduce what I had on the beret. Another example of troublesome Para!

The badge supplied was the 'staybright' silver version. I wanted to model the blackened version as I think it looks 'cool'. Having looked closely at these types of badges I have noticed they have a slight metal sheen showing through the dark colour. I reproduced this by painting the badge Humbrol Brass 16 and when thoroughly dry I overpainted it with a thin coat of Black 33, but let the metal colour show through. Finally a wash of black oil paint was applied to give the slight gloss finish required.



SLR after painting and slight polish applied to the nylon furniture.

LEFT: Beret and badge after painting as described in text. A lot more Parachute Regiment than Laura Ashley!

SLR

The Realistic SLR is very good indeed.(Item No. 10109). It comes in a carded pack of two rifles: a wooden stocked example and, as used here, one with the nylon furniture. Four additional magazines, two bayonets and sheaths, two Trilux sights, a passive night sight and a white parade sling are supplied.

Here I used the later plastic stocked weapon, which correctly has a nylon webbing sling. I added a Trilux optical sight to the weapon.

The detail is very fine and some parts are commendably thin, e.g. the carrying handle and sling swivels. Unfortunately the sling swivels kept coming off the rifle so I eventually glued them on. The rifle muzzle and flash guard area is particularly well-represented as I feel this gives the weapon its distinctive look.

The painted finish is quite flat so I enhanced it by dry-brushing Xtracolour X502 Natural Steel over the metal parts. Having fired the weapon, like many others, I remember the parts that lost the blueing due to wear. This includes the muzzle, sight vanes, magazine bottom and edges, trigger guard, trigger, sides of the receiver and especially the working parts seen through the ejector port. This was given a good coat of steel due to the wear on firing.

Don't add any metal to the rear of the Trilux as this was a rubber cup' I felt the nylon furniture was a little too matt so I carefully rubbed a small amount of Johnson's Pledge furniture polish to give it a very slight sheen.

Incidentally, Realistic have produced an excellent set of the Sterling SMG in a similar carded pack if you want alternative armament. The SLR is my favourite weapon of the period as I fired it many times on the ranges and thought then and now what a superb military rifle it is.

In Conclusion

I really enjoyed making this figure as I had wanted to model a British soldier from this era for a long time. It's such a change from Second World War subjects (anyone from outer space would think that only the Germans were involved by the model output, I am sure) and modern Gulf subjects. There must be others that would wish to model the British army from the 1950s to the 80s, the time of many 'Wars in Peace', and give credit to those that served in that time. Hopefully other products will be brought out to enable us to build these subjects.

References

Osprey Men-at-Arms 133. *Battle for the Falklands(1) Land Forces.* William Fowler and Michael Chappell

Uniforms Illustrated No 10. *The Paras. The British Parachute Regiment.* James. G. Shortt

Uniforms Illustrated No 2 *The Modern British Soldier.* Simon Dunstan.

Supplier

Barry Pippen at Pippen's Toys, 36
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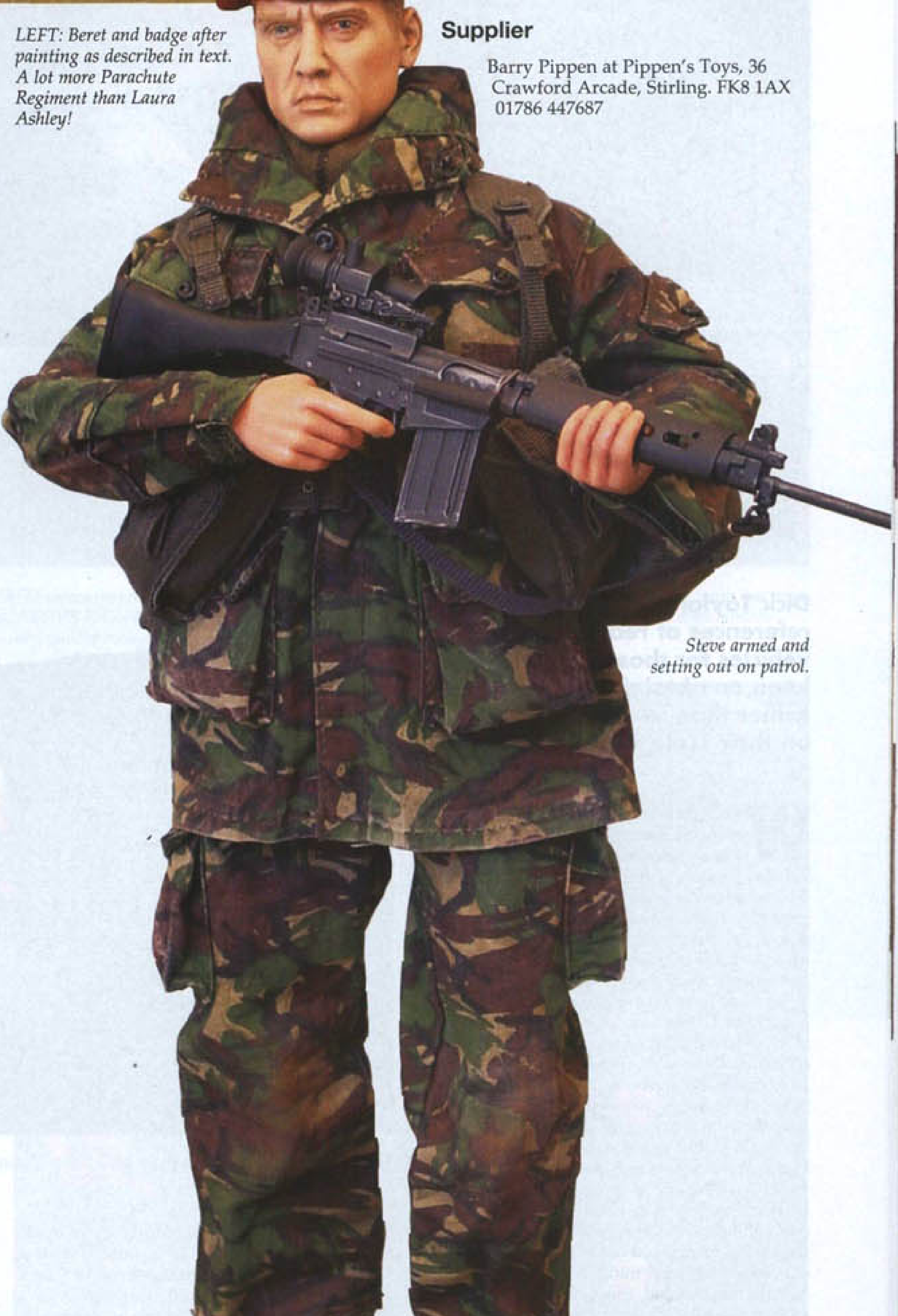
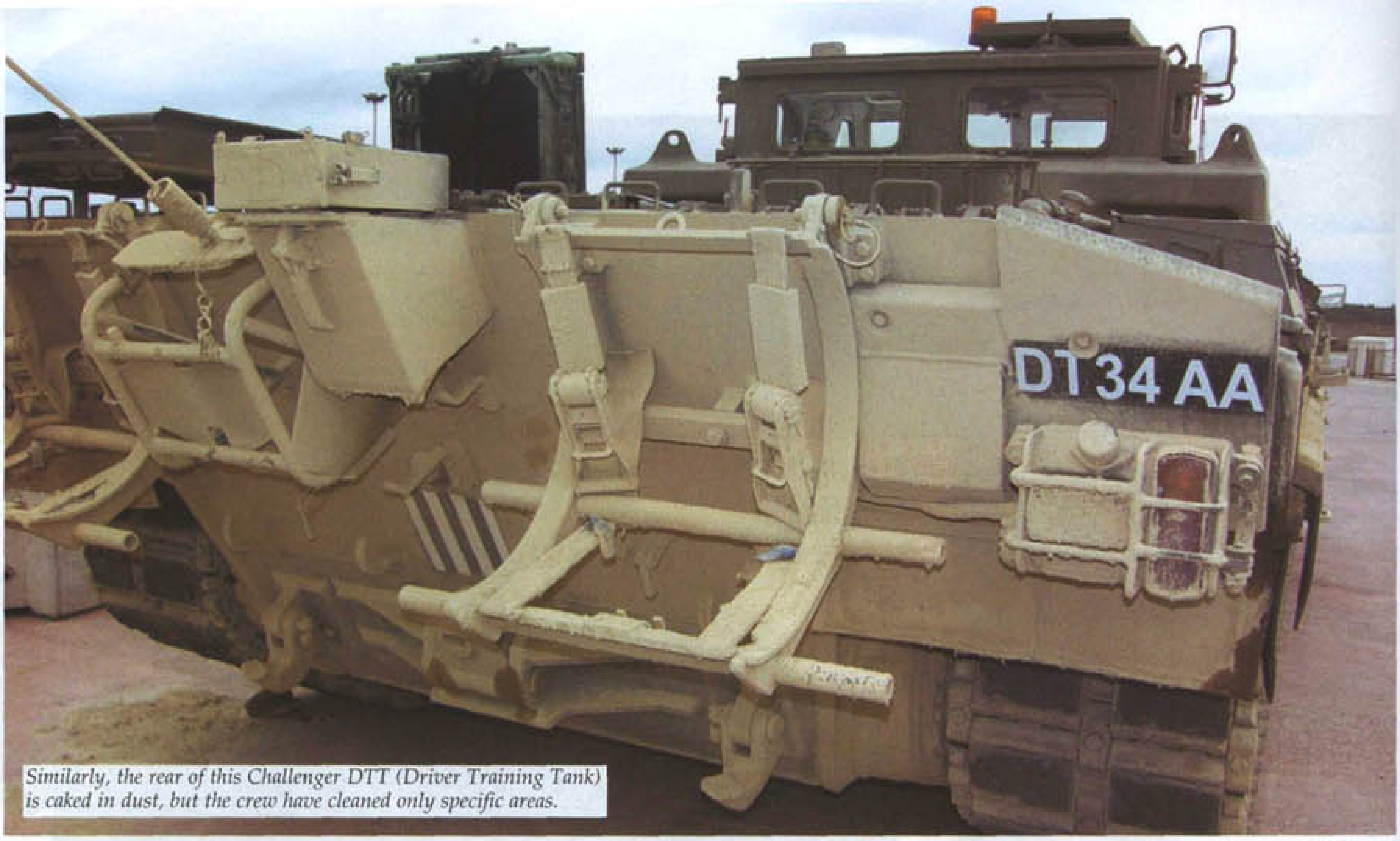
01786 447687



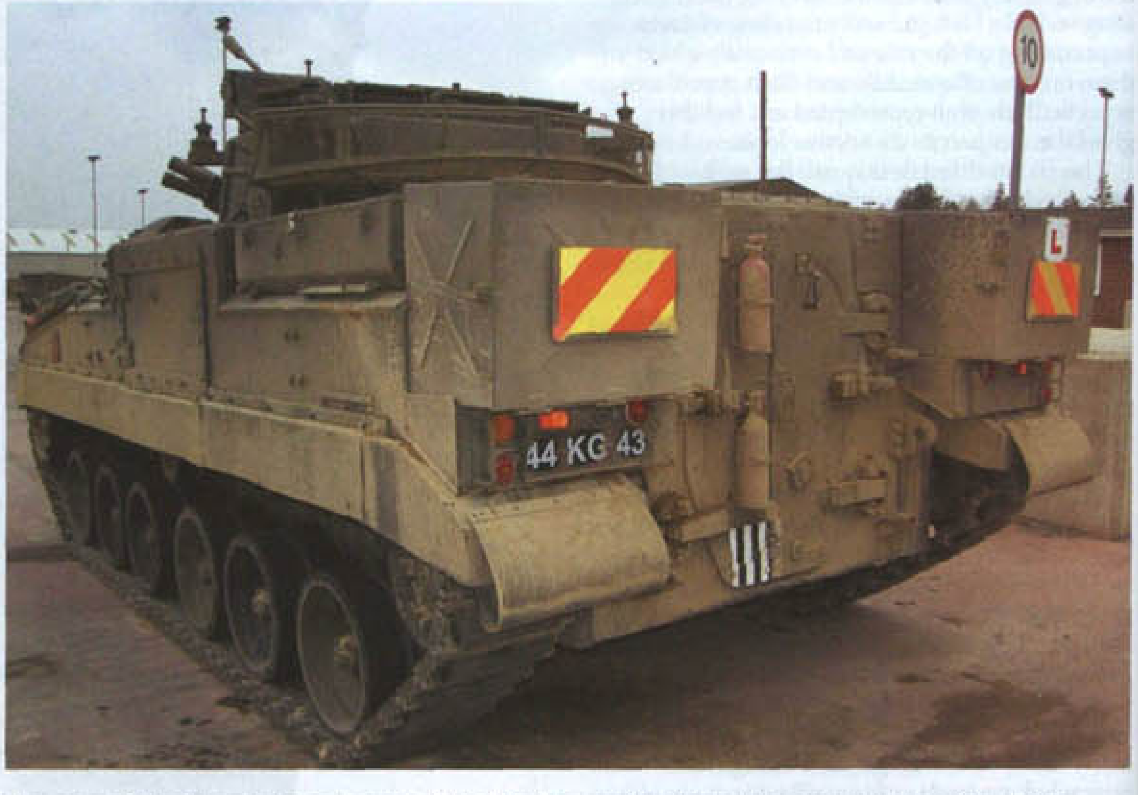
Steve armed and setting out on patrol.



Similarly, the rear of this Challenger DTT (Driver Training Tank) is caked in dust, but the crew have cleaned only specific areas.

Weathering the Storm

Dick Taylor offers some photo references of real military vehicles for those modellers keen on obtaining 'realistic' rather than 'artistic' effects on their scale vehicle models



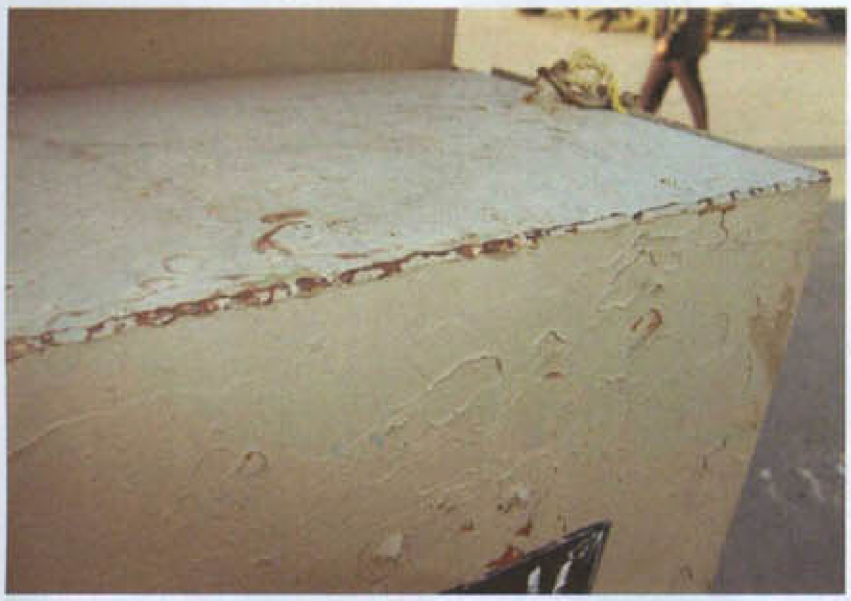
The crew of this Warrior have cleaned off the 'L' plate, registration plate, convoy plate, wide-vehicle stripes and rear lights.

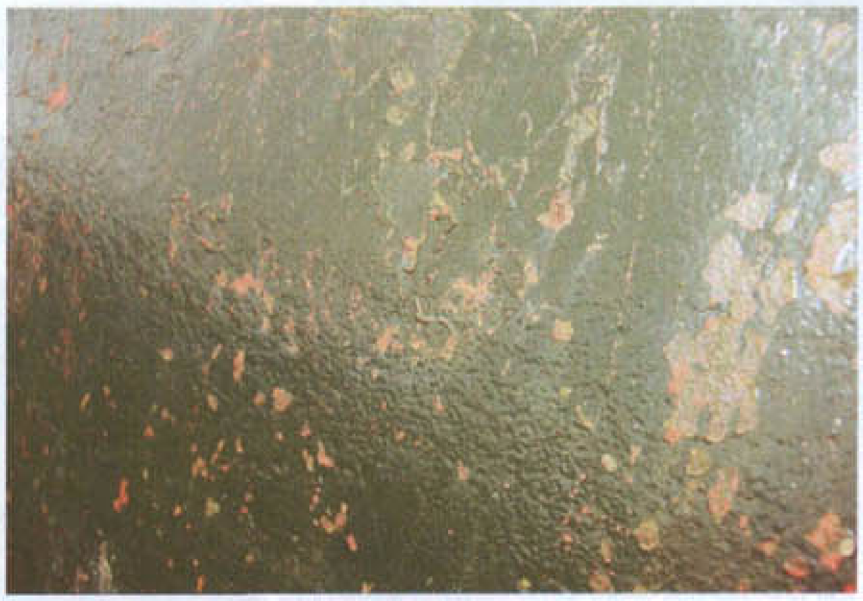
When I started modelling some 30 odd years ago, I seem to recall that there was only one weathering technique, and that was dry-brushing. Later, along came François Verlinden who seems to have been one of those most responsible for introducing the techniques of washes. (Please, please do not bombard the letters pages with claims of who invented what and when, it really doesn't matter!)

Nowadays, of course, there is 'pre-shading', 'filters', 'washes', 'chipping', 'salt erosion', etc., and I have to say that many models using some or all of these techniques do look absolutely stunning. However, there are some in the hobby who feel that the results sometimes aim to imitate what has become the 'fashionable' weathered look, rather than seeking to replicate real life - some modellers may base their effects on someone else's model, rather than on reality. Many, maybe most, military modellers have not served in the armed forces, and have had little or no exposure to the real thing in real conditions.

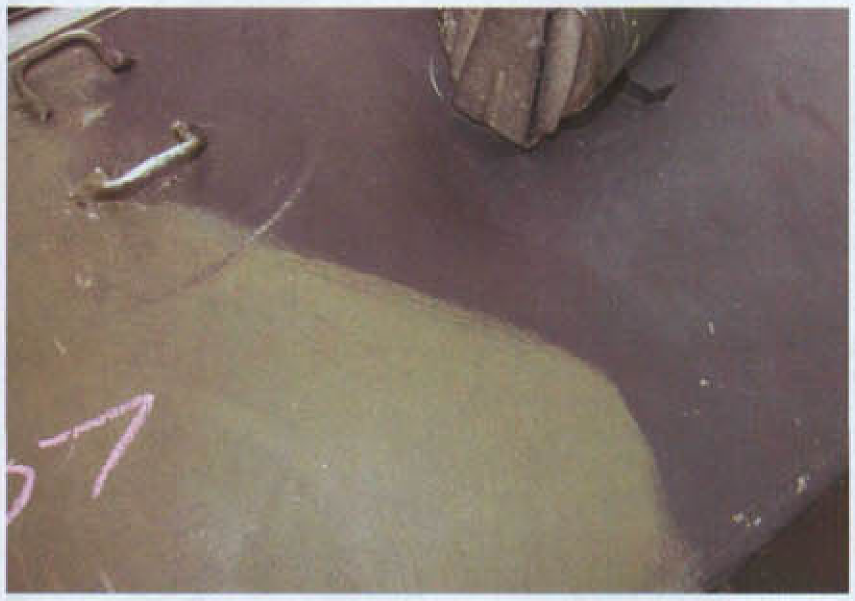
With this in mind, this article will look in close-up at such effects on real vehicles, and hopefully give some guidance on how and why real vehicles, both tracked and wheeled, end up looking like they do. All the photographs chosen to illustrate certain aspects and effects have been taken specifically for this article and, therefore, mostly are of modern vehicles. I have tried to include as wide a variety of vehicle types as possible. As a tank crewman who clocks up 30 years service in the Royal Armoured Corps this September, I think it is fair to say that I know what I am talking about when discussing dirty vehicles! I will not attempt to suggest how to replicate these looks in scale; I fully appreciate the limitations of my own techniques and I will, therefore, leave this safely in the hands of the experts. (Are there any volunteers out there who can write a companion article showing how to replicate each of the photographs shown here?)

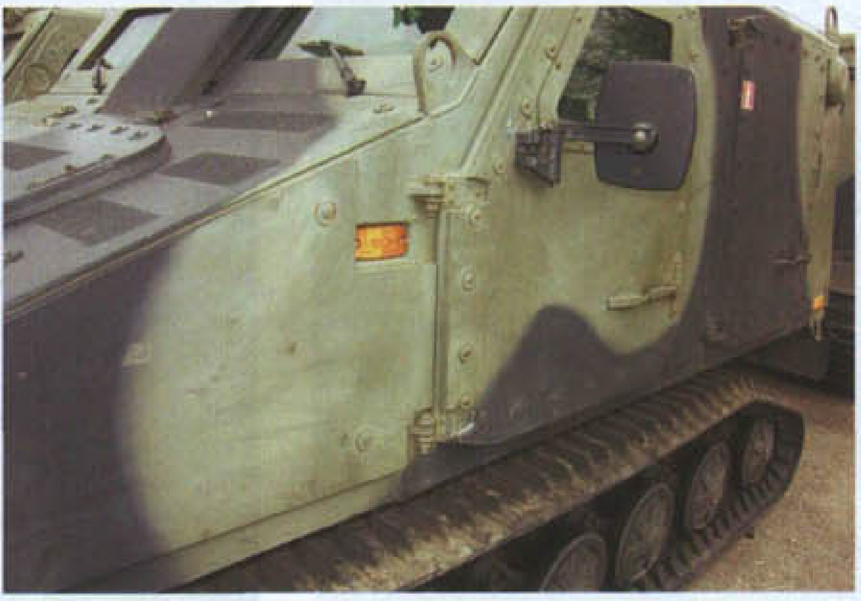
I'll begin by considering the three main types of what we currently group together under the term 'weathering' - maybe we should change the overall term to 'Scale Realism Effects?'





ABOVE LEFT: Many layers of paint can lie hidden beneath a seemingly flat surface. ABOVE RIGHT: Some surfaces are rough in the first instance because they are cast; any subsequent wear of the top paint surface is likely to reveal one or more other colours below, including primer - in this case red oxide.





ABOVE LEFT: This close up of the paint job on a CVR(T) shows just how rough the paint application can be even on modern vehicles - the black paint has been applied hurriedly, with no clear definition to the edges. ABOVE RIGHT: This Viking shows a lot of variation in the base NATO Green colour; even modern paint formulations professionally applied are not immune from the ravages of weather and man, and can discolour quite dramatically.

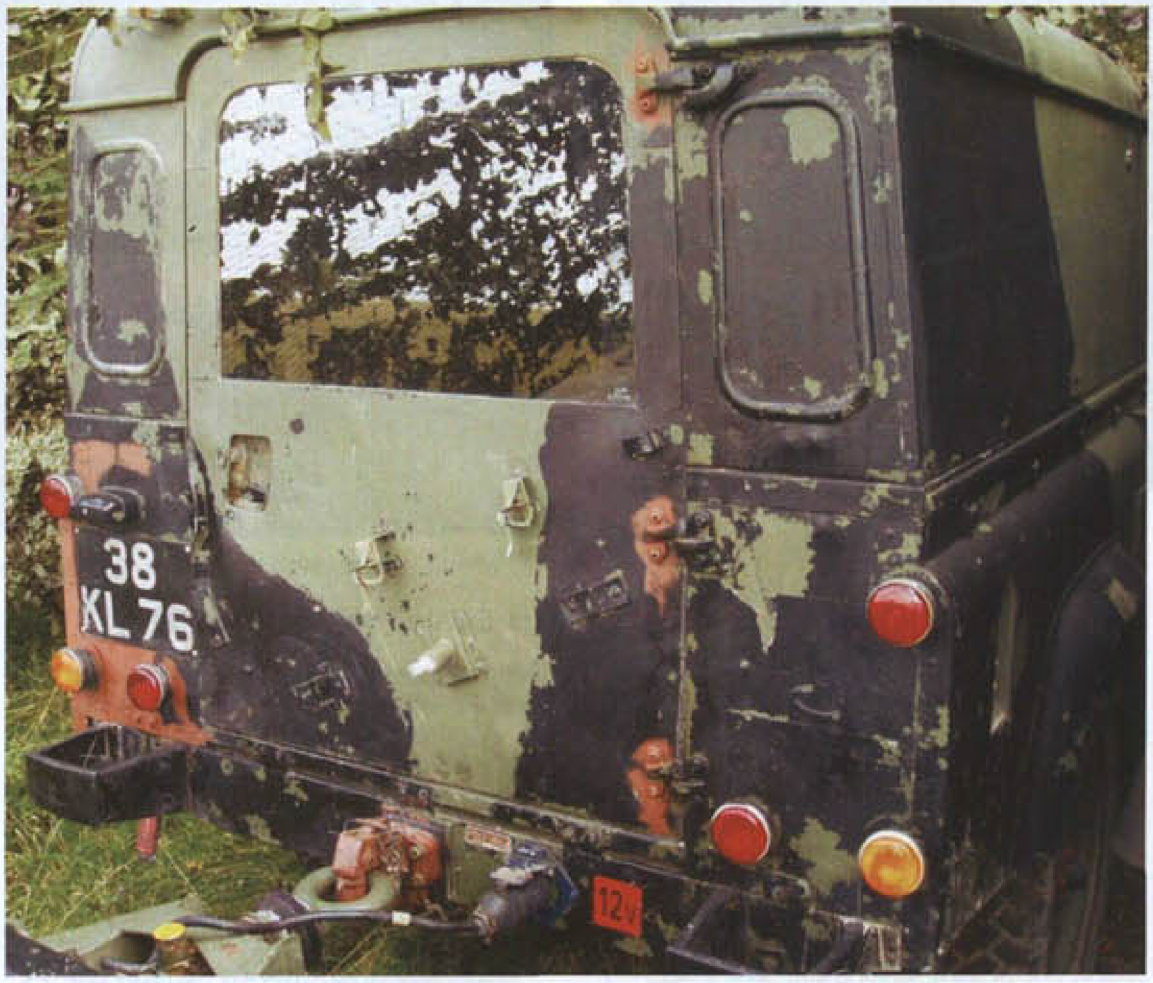
Normal wear and tear

Firstly, there is 'normal' wear and tear, that which is caused by the simple act of living and working on a vehicle. Paint a tank or truck in the most immaculate fashion ready for a parade, and within a couple of weeks of normal usage, without having left the front gate of the barracks, there will be all sorts of minor scratches, dents, and other cosmetic imperfections. There may be oil leaks, fuel spillage and general dirt and rubbish - most tankies (present company excepted) are not house-proud! Exhausts will begin to rust and over a period of time will get worse. Remember that a lot of restored military vehicles at shows and displays - and generally also museums - are always presented in near 'showroom' condition; the next time you look at one, consider what it would become like if the crew had to live on it, much less fight in it.

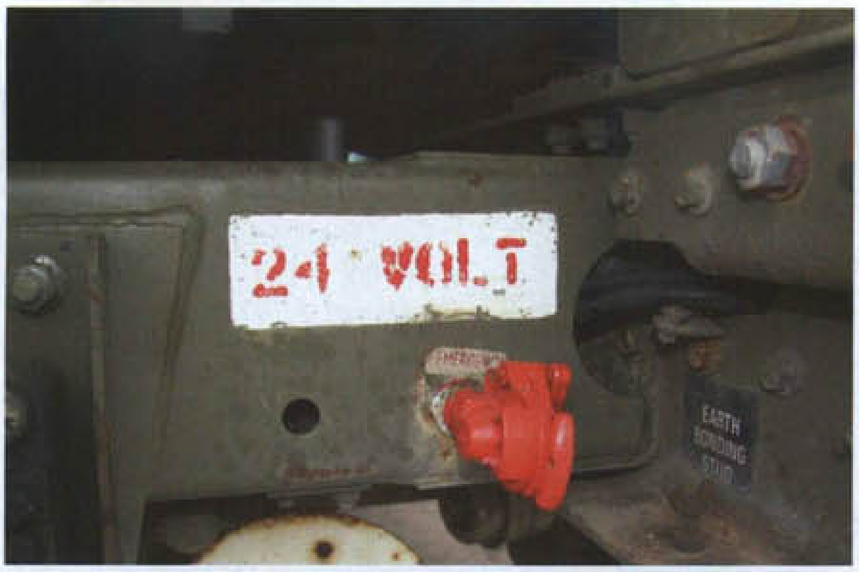
Damage

Secondly, there is damage, caused either by accident or by enemy action. This generally leads to bent and twisted metalwork or completely missing components that have had to be removed - wings are the obvious examples, but bins, baskets and add-on armour plates also come into this category.

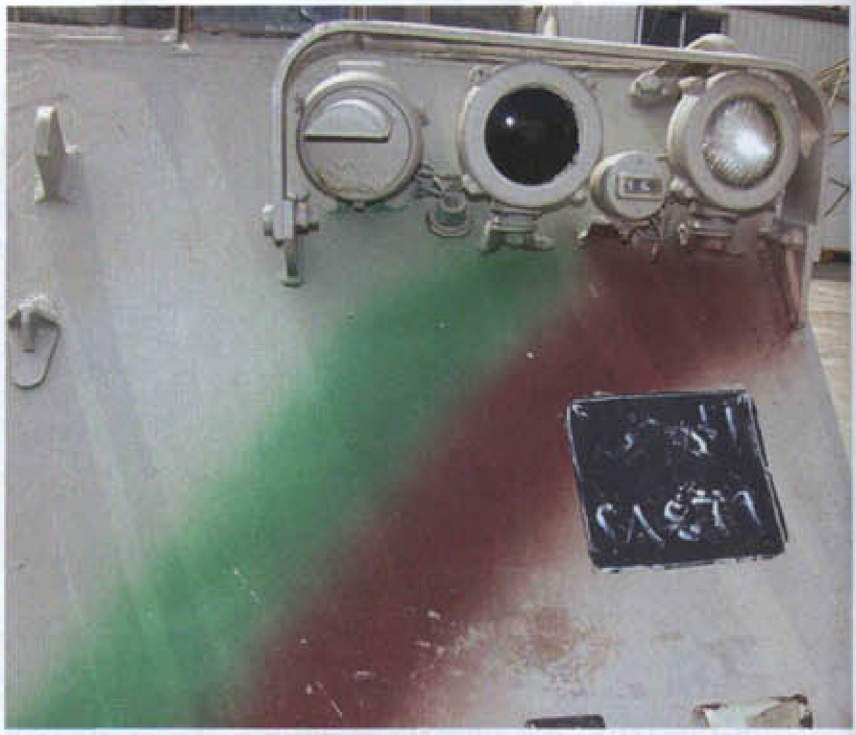
Replacement parts may come in different colours - for example, new Land Rover panels always come in semi-gloss black. In WW2 many parts delivered to desert areas were in standard European colours, not in a shade of

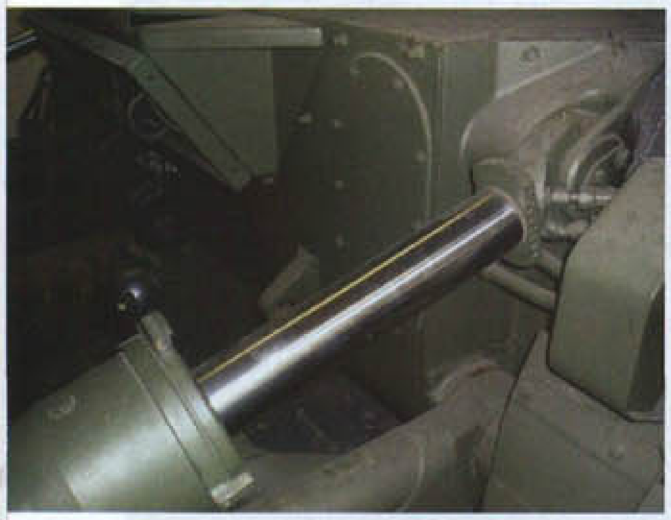


A Land Rover that has seen better days cosmetically, but is probably in perfect condition mechanically. However, the IRR Black paint has worn off to reveal NATO Green underneath, and Red Oxide (Red Lead) has been used to patch damaged metalwork.

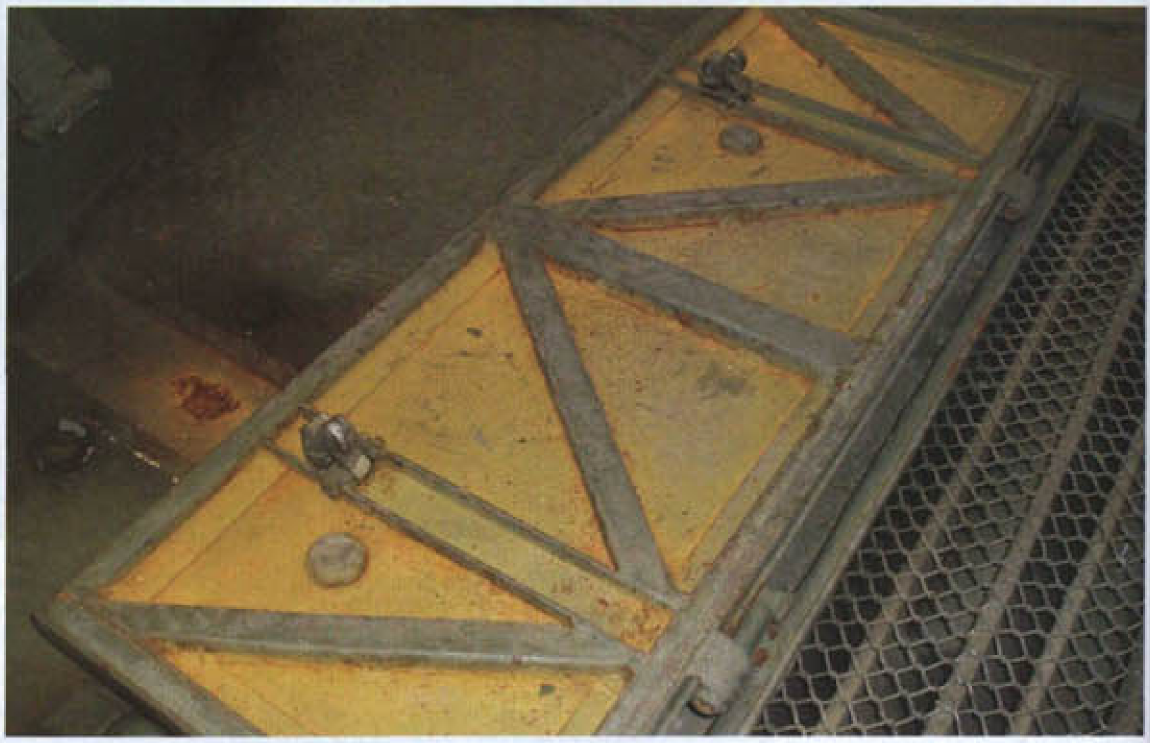


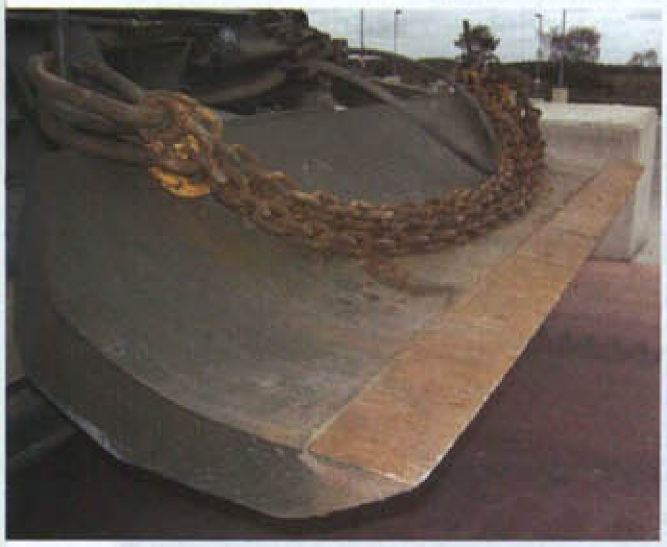
ABOVE: The sign might do the job but it doesn't look pretty! Stencilling was and is used extensively by many armies, and can look very poor if not done carefully - which is often the case. RIGHT: Freehand painting can be just as bad - a lack of white paint and/or time has meant that the registration plate on this M113 is scarcely readable.





Hydraulic rams are the one item that can almost be guaranteed to be clean and shiny, whatever the rest of the vehicle is like.





This CRARRV shows a number of complimentary effects. The front bare metal edge is rusted and scored, and the whole blade has a multitude of lateral scratches caused by the digging motion.

ABOVE: Rust colours vary enormously, from the yellow colour on this T-55 to the dark brown on the Challenger 1 exhaust. (right)

sand. And even the best tank commanders sometimes accidentally bend their tanks whilst manoeuvring, and there is always "Sod's Law". I recall once deploying on an exercise in a brand-new (and I do mean brand-new) Challenger. On the first day of the exercise I was static on a road and my Regiment's 'A' Squadron drove past at high speed; one of their tanks misjudged things and ripped the whole of the metalwork from the left side of my vehicle - bazooka plates, tow-rope, the lot. I was not happy!

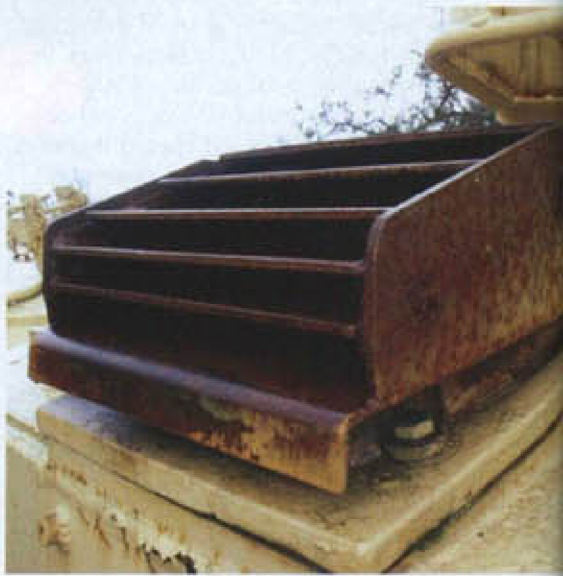
True weathering

And lastly there is true weathering, which varies from the appearance of a wet vehicle in the rain, through layers of dust, mud and snow, to the effects of strong sunlight on fabric, materials and paintwork. These have a temporary effect on the vehicle's surfaces, but over time they can also damage paintwork, corrode metal, and fade or stain wood, canvas and paint.

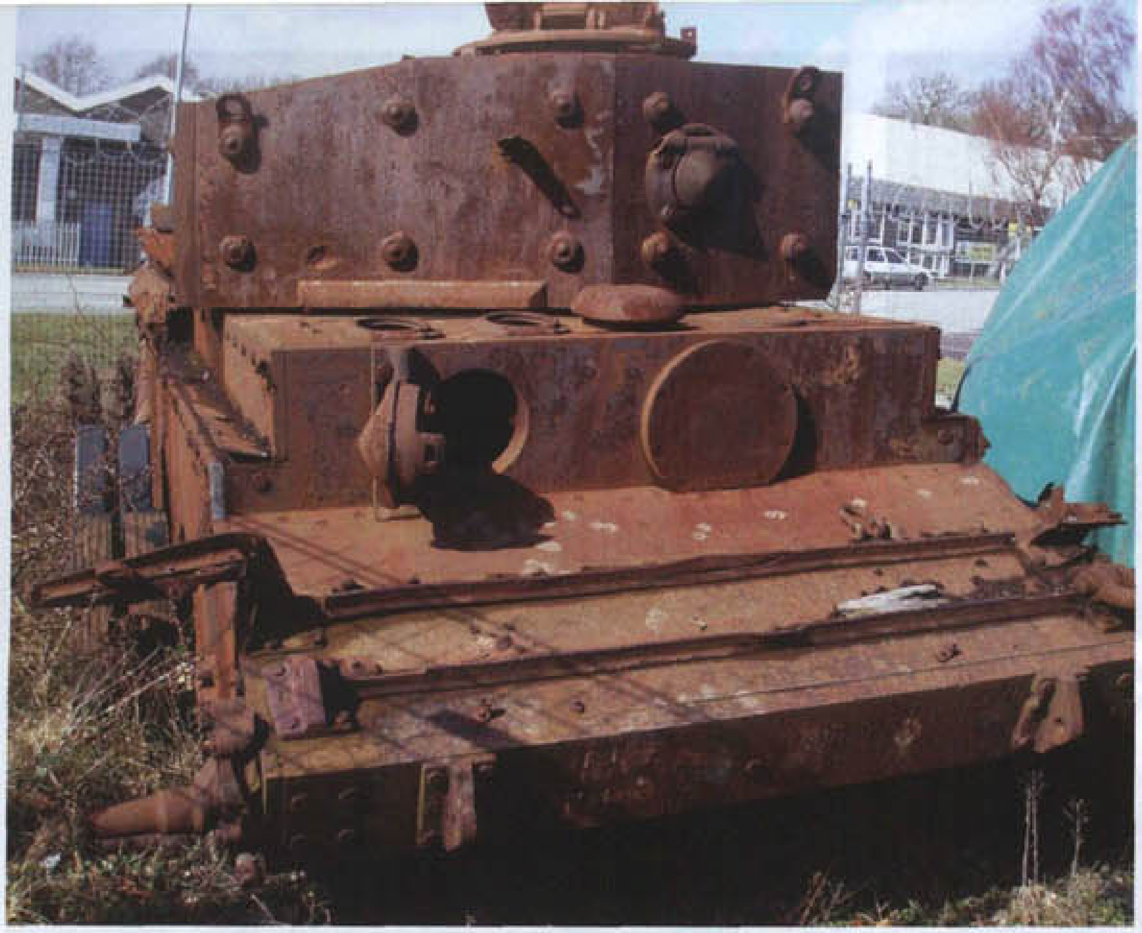
1:1 Scale realism effects!

Using as many photographs as possible, we should practice examining real examples, but one last point before we do though: in many armies it is military practice to clean headlamps, brake lights, callsign markings, registration plates, etc., on a dirty vehicle - these items are meant to be seen, for safety and/or tactical reasons, so it is common to see completely filthy vehicles with these areas cleaned locally, giving a sometimes incongruous look.

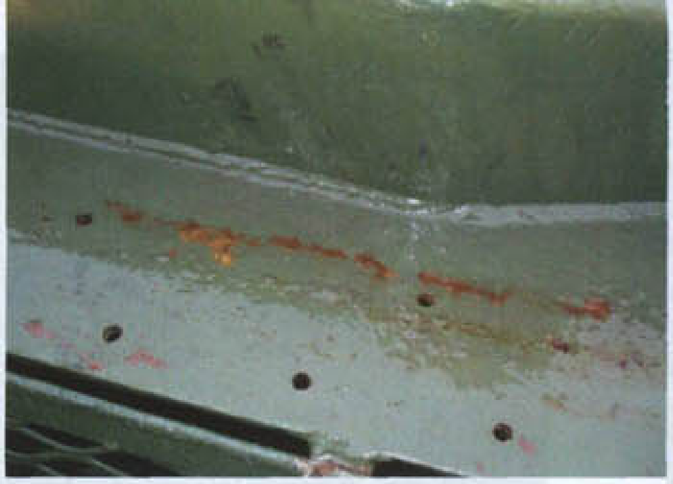
Think first of all what the surfaces may be like before any of the three types of effect mentioned above come into play. Remember that if the crew are responsible for painting



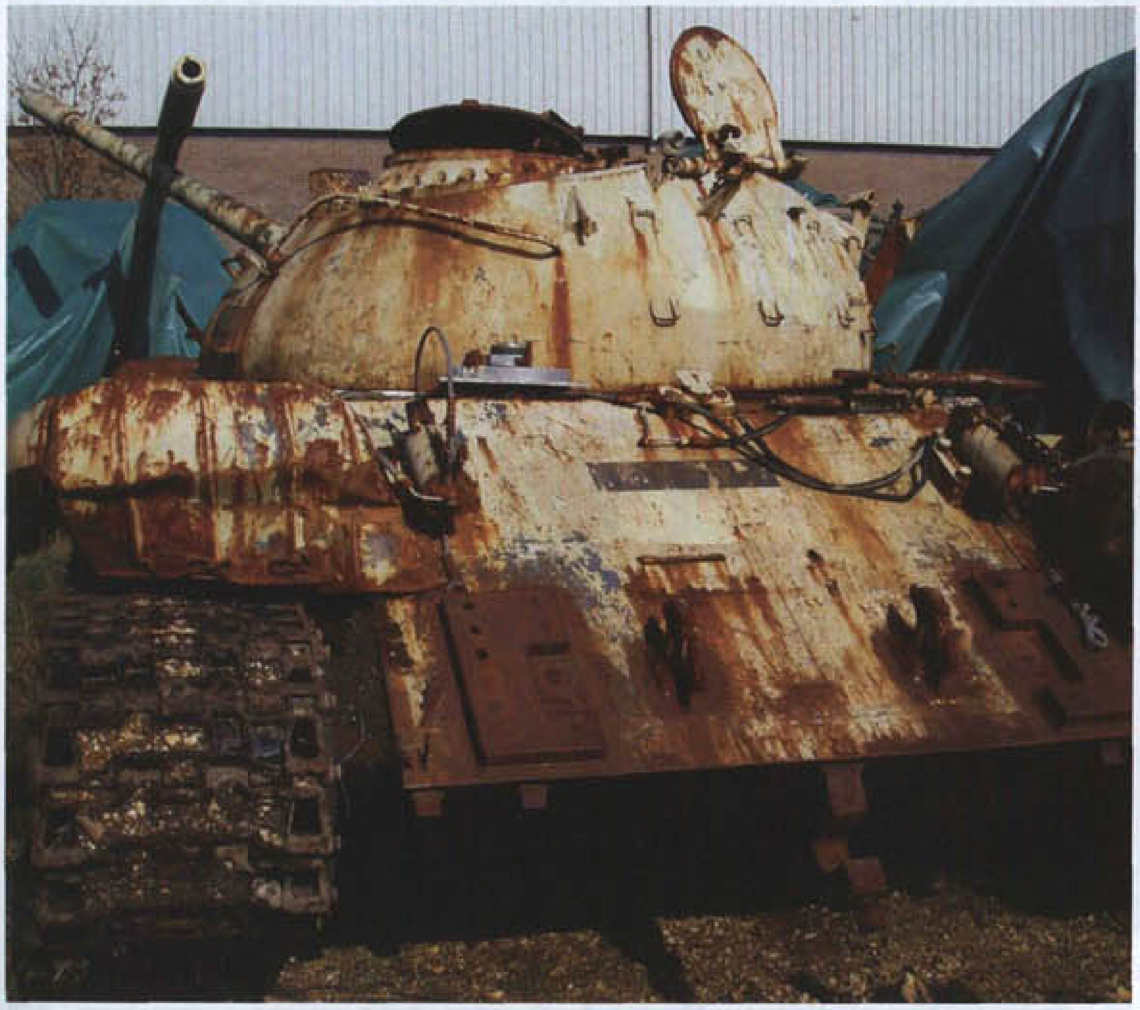
their own vehicles, they are not professional painters and will often botch the job; they will over-thin the paint which will cause runs, they may use mixed batches with colour variations, and will paint straight over dirt and rust and previous colours without priming. Indeed, the vehicle may have been painted many times, with different layers of paint; not all surfaces will be absolutely smooth - as modellers we go to great lengths to remove such imperfections, so do vehicle restorers; real tank crews don't. German vehicle crews in Russia were known to have



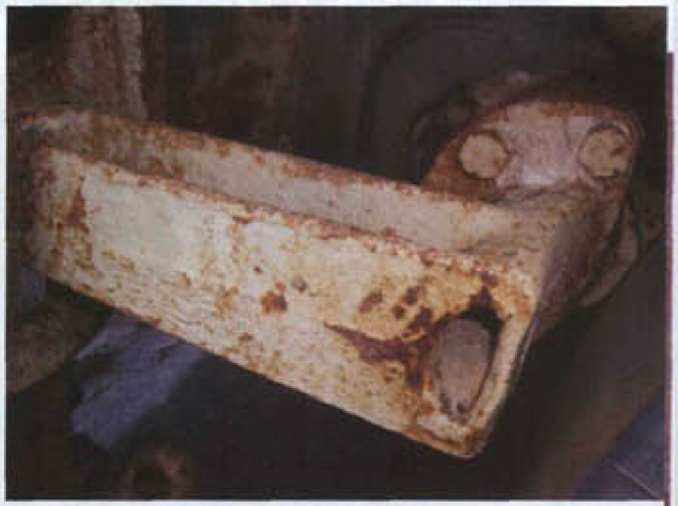
Extreme Rust No.1: A Cromwell hulk after decades of neglect on a firing range. Knocked-out vehicles often take on this sort of appearance after being set on fire.



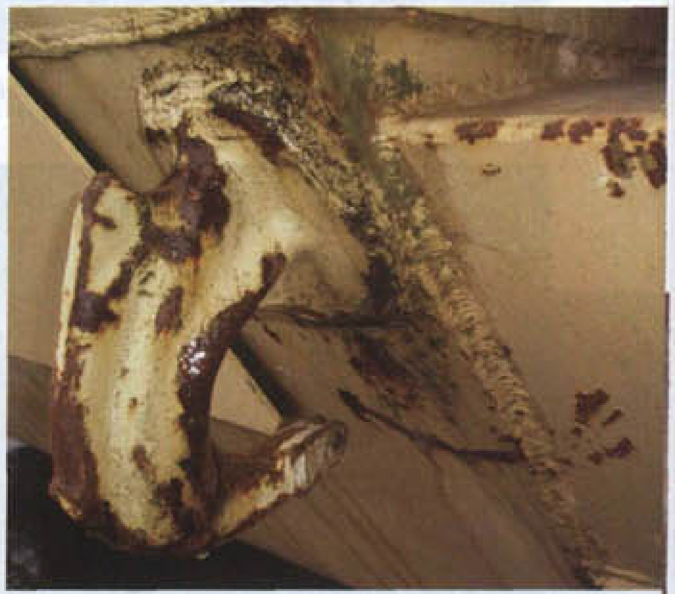
Subtle rust: scrapes and scratches that go through to the metal will often rust if left bare. These are likely to occur in high-traffic areas, where the crew mount, dismount or carry out servicing, and are particularly common where tools are used. This is part of an FV 433 Abbot self-propelled gun.



Extreme Rust No.2: An Iraqi T55 in a scrap yard; many low-grade armies care little for what their vehicles look like - cosmetically.



A heavily rusted (but perfectly serviceable) suspension unit on a Russian 2S1.



Think about which components are likely to have the paint knocked off in normal usage; the tow hooks on the 2S1 for example. Notice that the areas immediately adjacent to the hook are likely to get similarly affected, as the crew manhandle heavy cables and chains in the vicinity.

re-painted their vehicles many times each year to match the changing seasons, so even comparatively new in-service vehicles can have these imperfections.

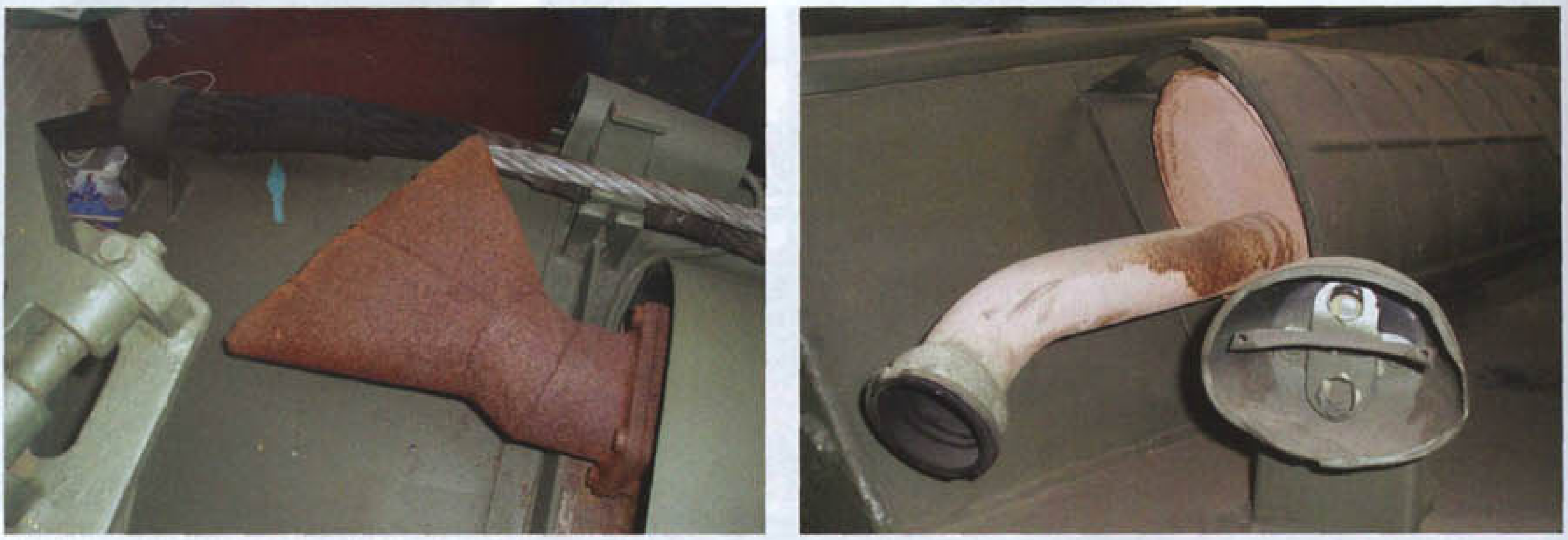
Bare metal

Not all surfaces on military vehicles are painted. Look for the location of bare metal components, including hydraulic arms on artillery and plant equipment. These items have to be made of high-grade polished metal, and the ram generally has a wiper seal on the inside to prevent dust and dirt entering the mechanism. Crew maintenance will involve keeping these clean and lightly oiled whatever the state of the rest of the vehicle, so it is entirely feasible to see a self-propelled gun caked in mud, but with beautifully pristine ram arms.

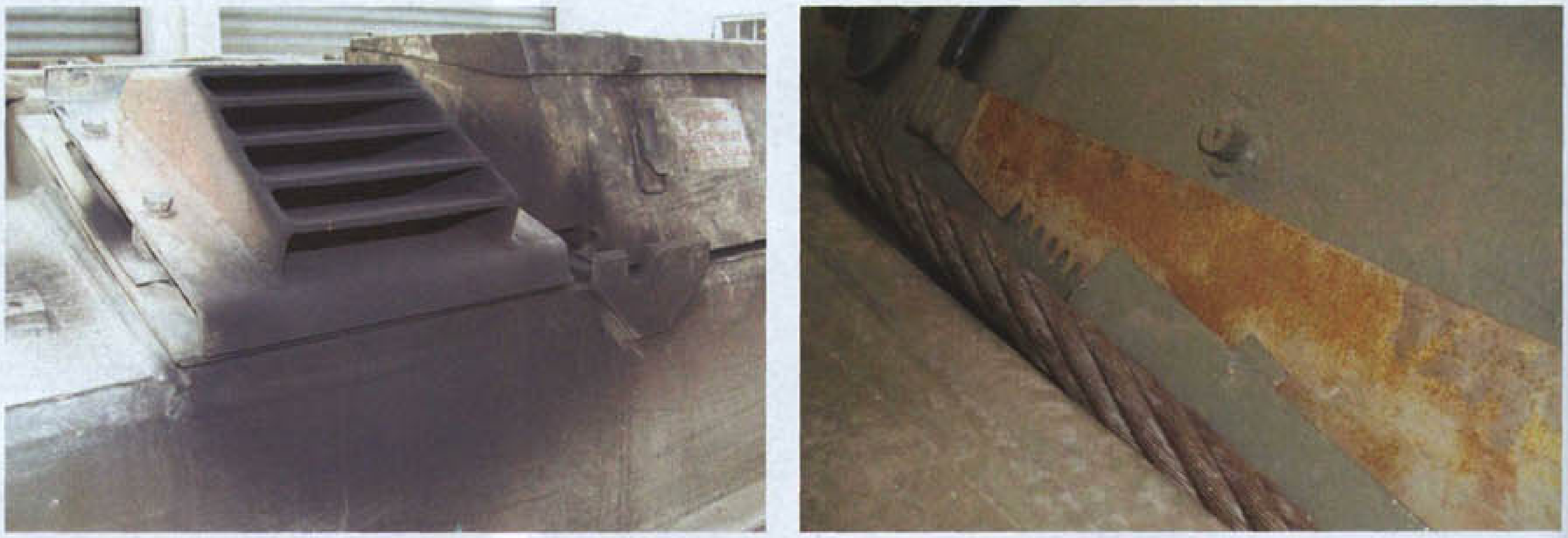
Oil, fuel and grease stains

There are a number of reasons why oil, fuel or grease stains could be on a vehicle. Fuelling up is generally done in a hurry, as the act of refuelling puts the vehicle in a position in which it is unable to defend itself easily if attacked. Therefore, fuel spills are common, more so if the refuelling was conducted using jerrycans or similar. Petrol evaporates quickly, but diesel is often dyed and leaves a coloured residue staining the paintwork after it has dissipated; blue, purple, red, pink and orange shades being common. Fuel tanks often have breather pipes, and fuel can spill from these if overfull. However, do not forget that in situations where fuel was scarce - the Germans in the Ardennes in 1944 for example - great care would be taken to ensure that every precious drop went into the tanks.

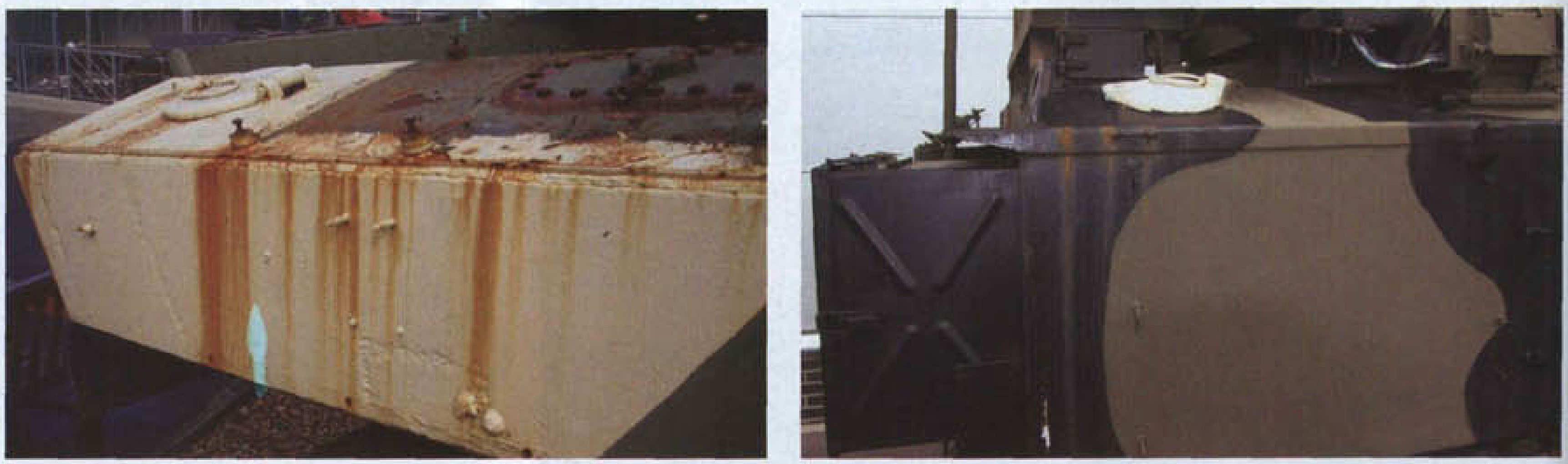
Oil is used in many components - engines, gearboxes, wheel hubs, differentials, traverse



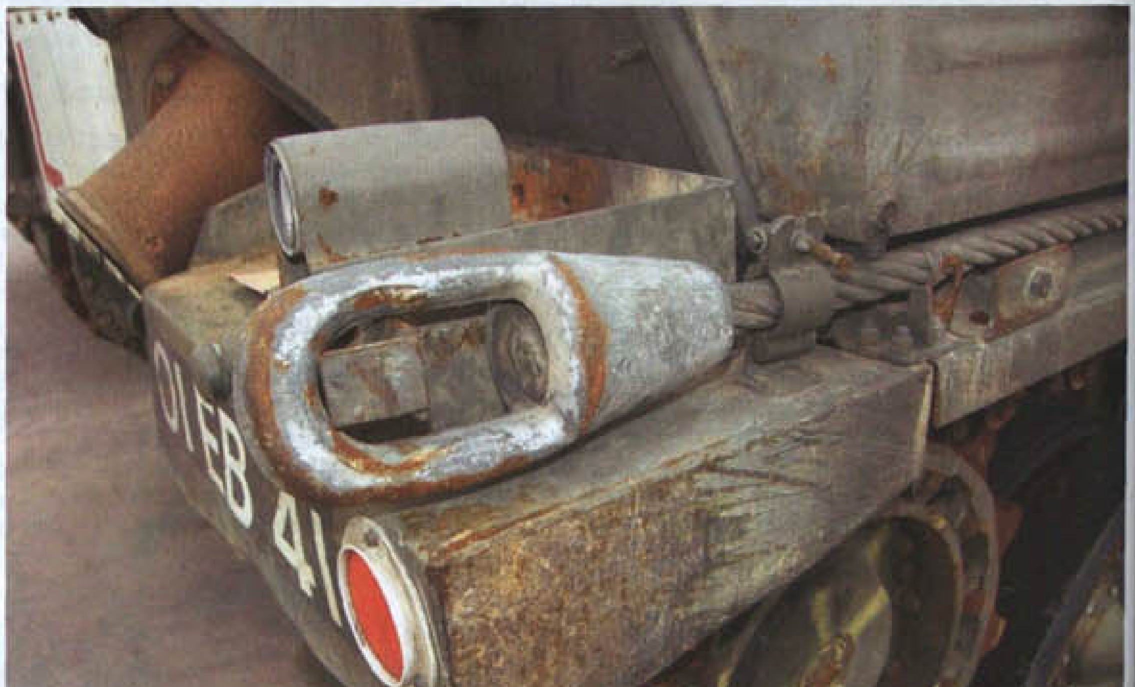
ABOVE LEFT: Exhaust pipes often rust heavily because of the heat that passes through them. Note the texture of this Centurion's fishtail caused by surface corrosion, and also the black soot staining on the towrope. ABOVE RIGHT: Some exhausts can turn a pinkish colour, as on the BRDM 2; again, note the soot staining, this time inside the pipe.



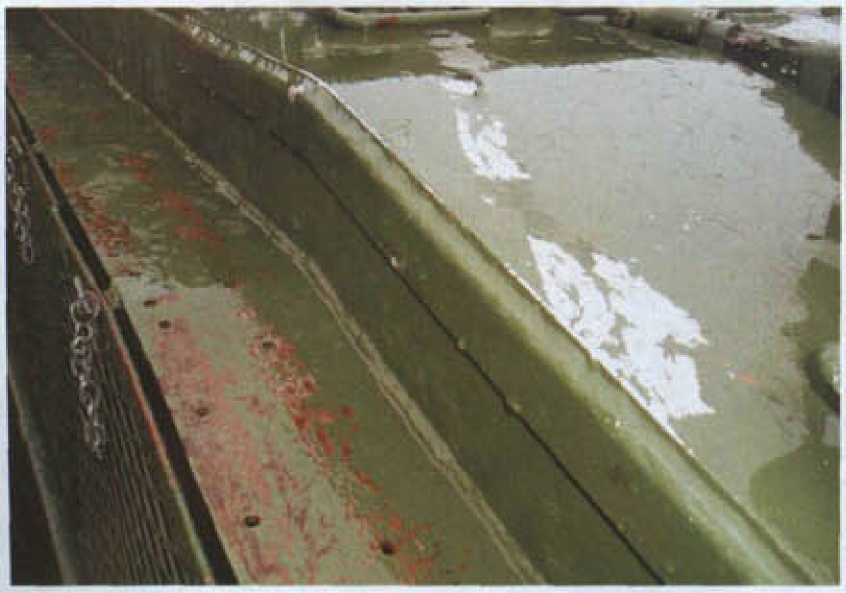
ABOVE LEFT: The exhaust on Challenger 2 is deliberately designed angled downwards to avoid blowing smoke up into the air, but this has the effect of staining the surrounding area of the hull. ABOVE RIGHT: Tools will rust quickly if not painted; the saw-blade on a T-34-85 being a case in point.

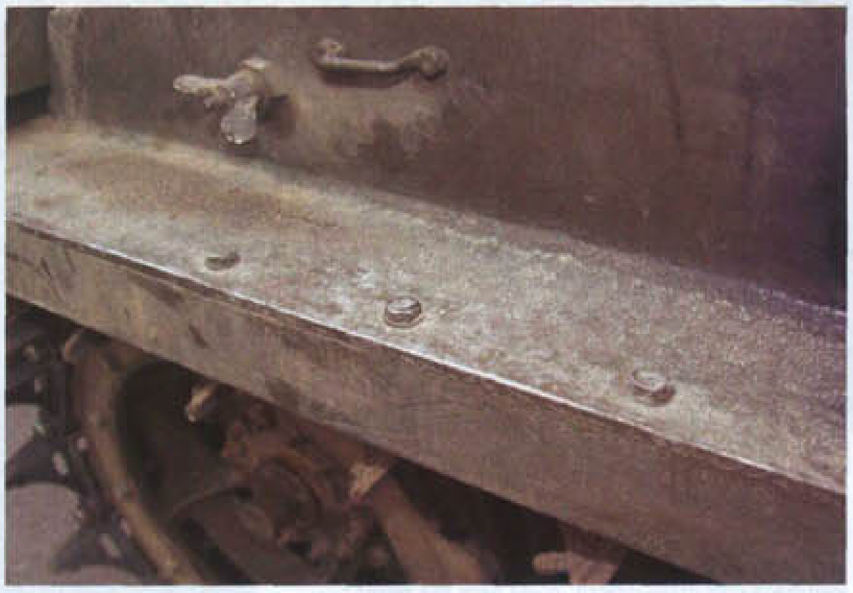


ABOVE LEFT: A favourite effect for modellers is rust streaks - this would probably be considered overdone if seen on a model Challenger. It has been caused by rust 'bleeding' from corroded components on the upper surface of the hull. ABOVE RIGHT: Much more subtle rust streaking is visible on this FV436. RIGHT: The Chieftain's towrope has caused extensive scratching to the paintwork on the mudguard.

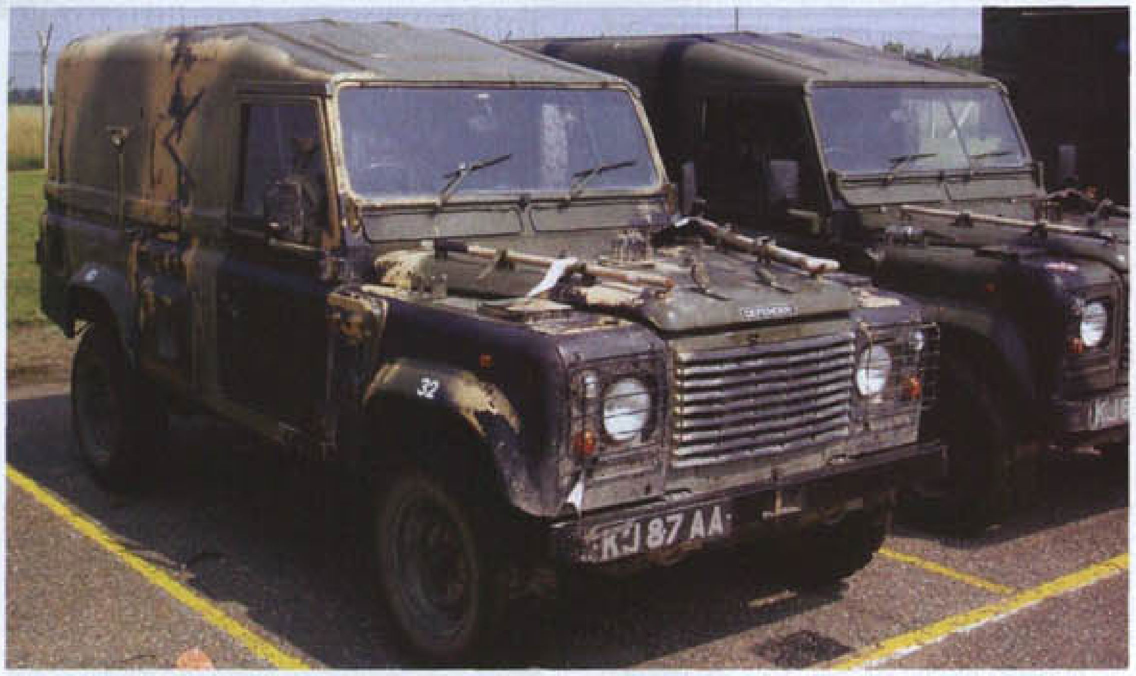


and elevation gearboxes, recoil buffers, etc. Again, small amounts of spillage are common when servicing these items. Cans holding oils often have a residue around the caps, which, if not cleaned off, would soon attract sand or dirt to leave a sticky, greasy coating. Grease is widely used in lubricating sealed components, especially suspensions. If looking for total accuracy, it is very important to research the vehicle in order to discover which components are which, and therefore where the stains would most likely be.

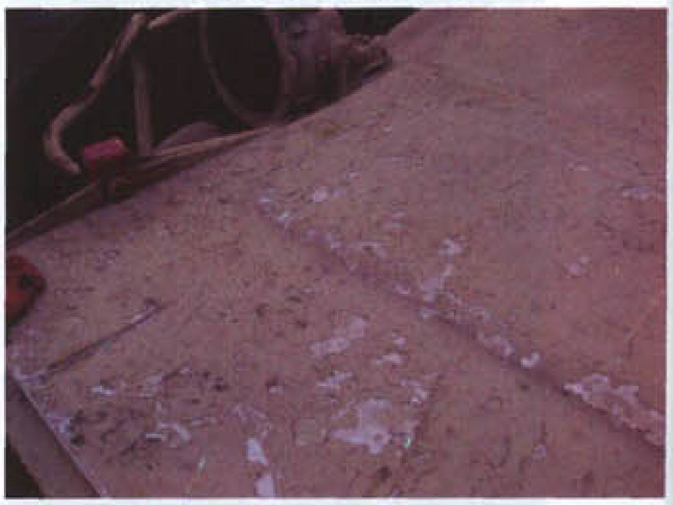




ABOVE LEFT: Two different metals in use on the Abbot; the aluminium engine deck plates do not rust, whereas the mild steel track guards soon show the effects of corrosion. ABOVE RIGHT: Wear on this Spartan's track guard shows that bare metal is not often shiny, but rather a greyish tone.



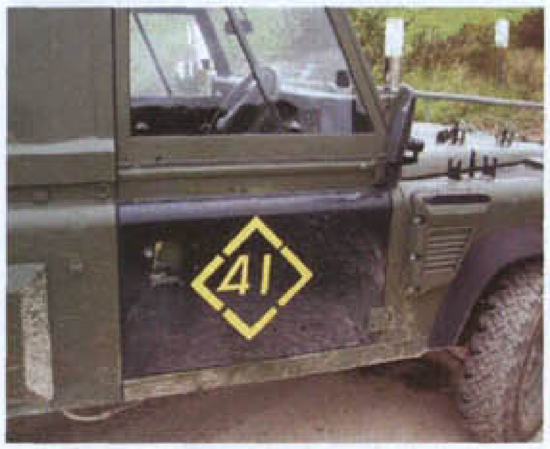
The Light Stone Temporary Camouflage Coat (TCC) on this Land Rover has almost totally worn off, revealing the original green and black finish underneath. BELOW: Replacement parts are often supplied in a different colour to that in use - this Land Rover lower door panel for example.

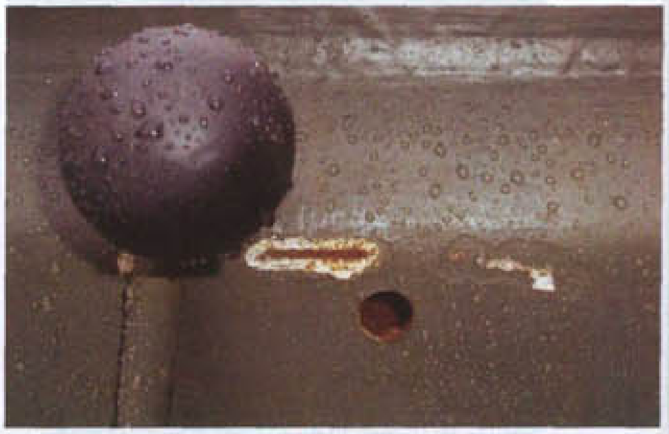


ABOVE: Chipping is a popular model technique these days, and some vehicles can suffer badly from this effect, this is the bow plate of a BMP-1, and the chipping has gone through to the bare aluminium beneath. BELOW: Scrapes on paintwork caused by contact with another component are common; note how the scrape is slightly curved, following the path of the knob on the top of a lever as it rubs against the side of the vehicle.

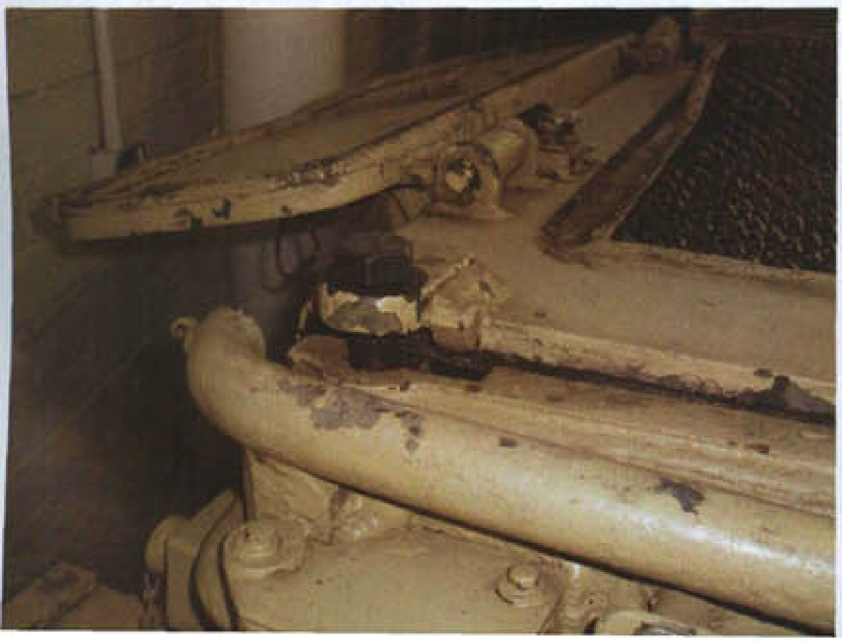
Rags

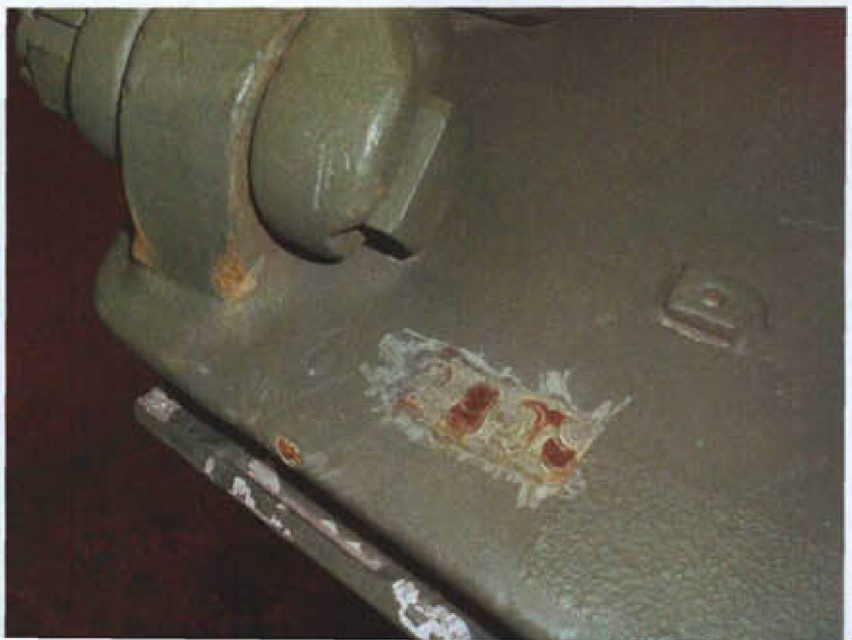
One element of 'tank tools' that is almost invariably forgotten by modellers is rag. Rag is used in great quantities when servicing, cleaning guns and optics, etc. Drivers often leave a piece conveniently stowed near the engine oil dipstick and similar locations, and will have more tucked away somewhere on the vehicle or thrust into a pocket. Rag can vary from cotton waste to multi-coloured clothing items torn-up into suitable sizes.

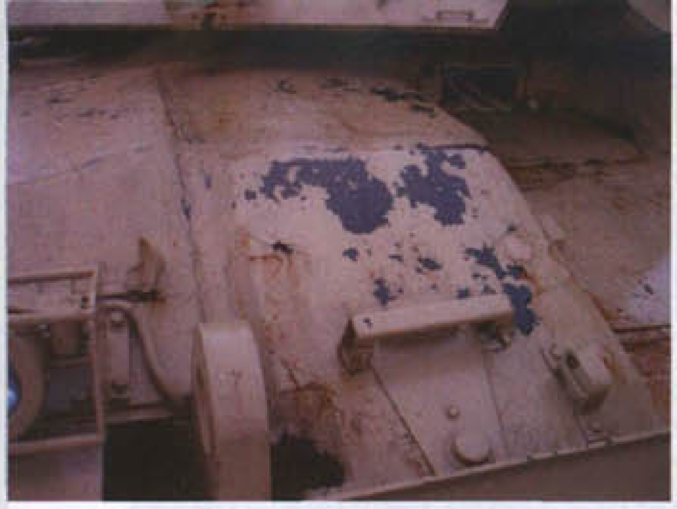




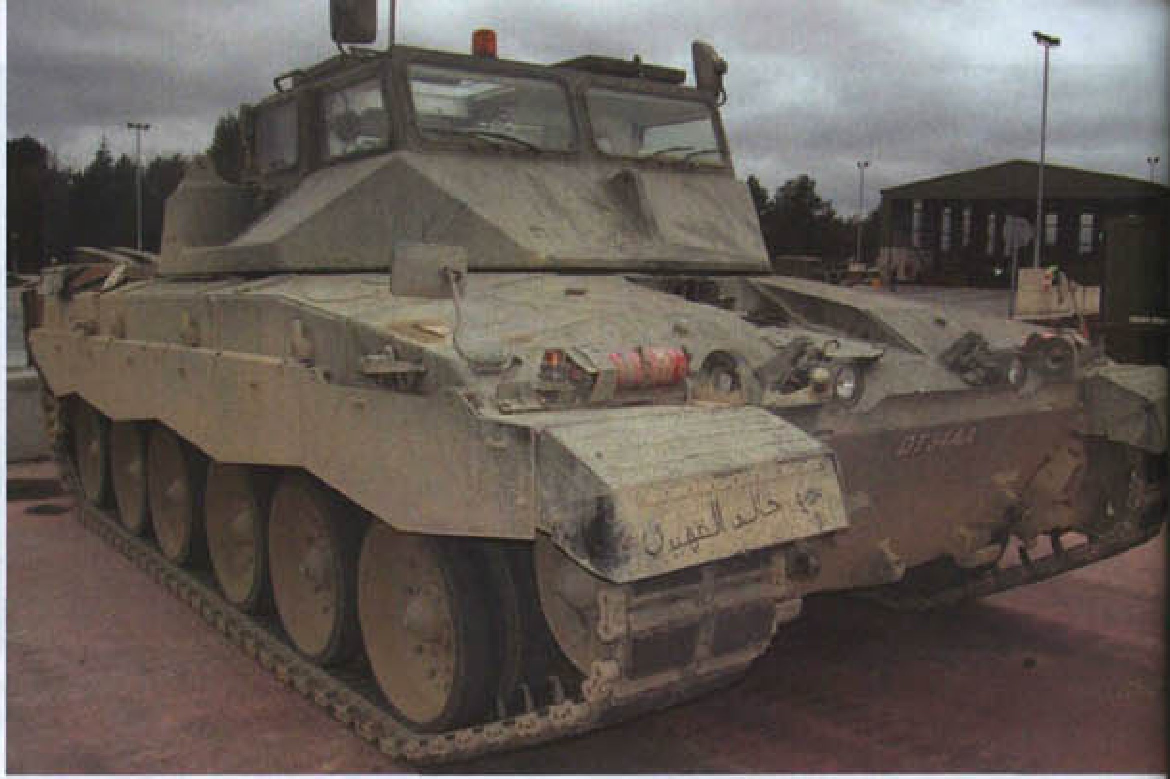
BELOW LEFT: Typical paint chipping occurs in high-traffic areas, like this T-62 engine deck. BELOW RIGHT: Damage to the glacis plate has probably been caused by contact with the towrope or other metallic objects.



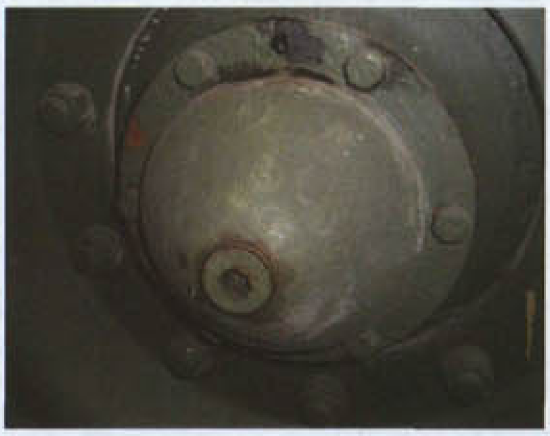




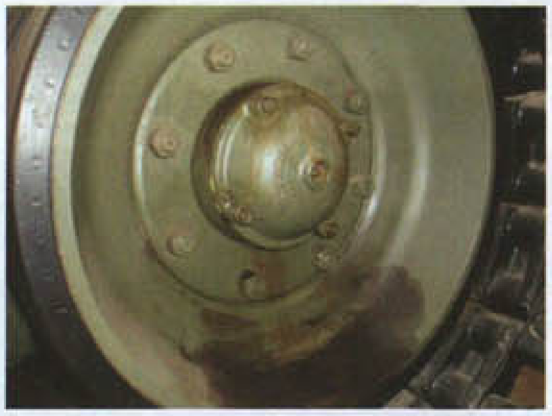
This chipping on the Challenger 1 was brought about by applying a thin layer of paint quickly - it was only meant to last for a few months, and has worn particularly badly where crewmen have mounted and dismounted. Note how the paint underneath the tool stowage (the track tensioning spanner) has actually been protected by the tool, and appears relatively fresh and undamaged.



Dust will coat a whole vehicle, muting its overall colour. However, it will not be evenly distributed over the whole vehicle; the front, tracks/suspension and rear will generally be the worst affected. The crews will rub some dust off as they move around and on and off the vehicle, and will have to clean it from sights and windscreens.



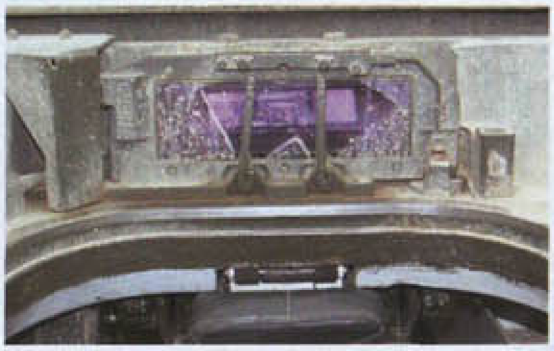
Slight oil leaks from hubs are very common, even on modern vehicles.



If a hub leak is bad, or oil is spilt whilst topping up, the effect can be very obvious, as on this Centurion.

Rust

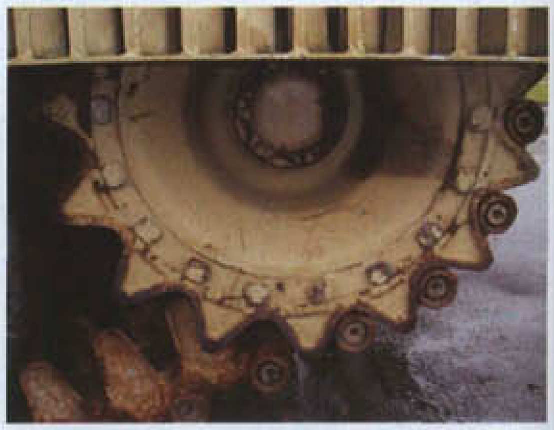
Rusting is a favourite effect on models. It can be overdone, but examples do exist of heavily rusted vehicles, particularly those that have been in service for many years with armies that care little for cosmetic appearance. Knocked out vehicles that have caught fire generally rust tremendously as the immense heat oxidises the metal. Other areas of rust may be subtler, and the placement of such rust must be carefully thought out. The colour of rust can vary from yellow through oranges and reds to dark brown. In other cases bare metal may not rust - aluminium, for example, of course does not rust. Nor do all bare metals have 'metallic' finishes; in many cases, they appear as a dull grey.



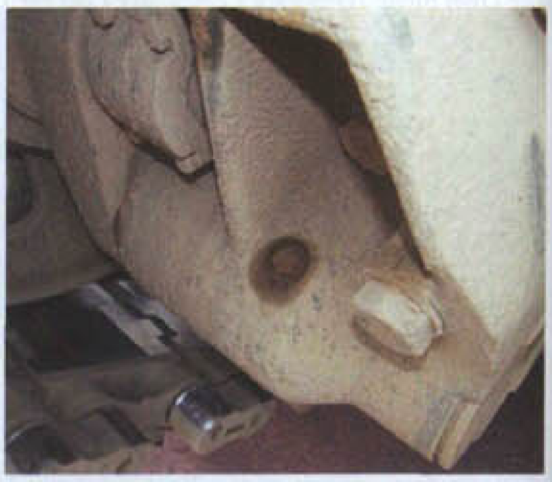
A favourite small scale effect is the replicating of the sweep of windscreen wipers on a dirty screen; the same effect in miniature applies to sighting systems that have wipers, here on a Challenger.

Observing full size vehicles

For those modellers who find it difficult to observe real military vehicles at close hand, civilian vehicles can often be a source of inspiration, as many types get dirty in a similar way to tanks and other military platforms.

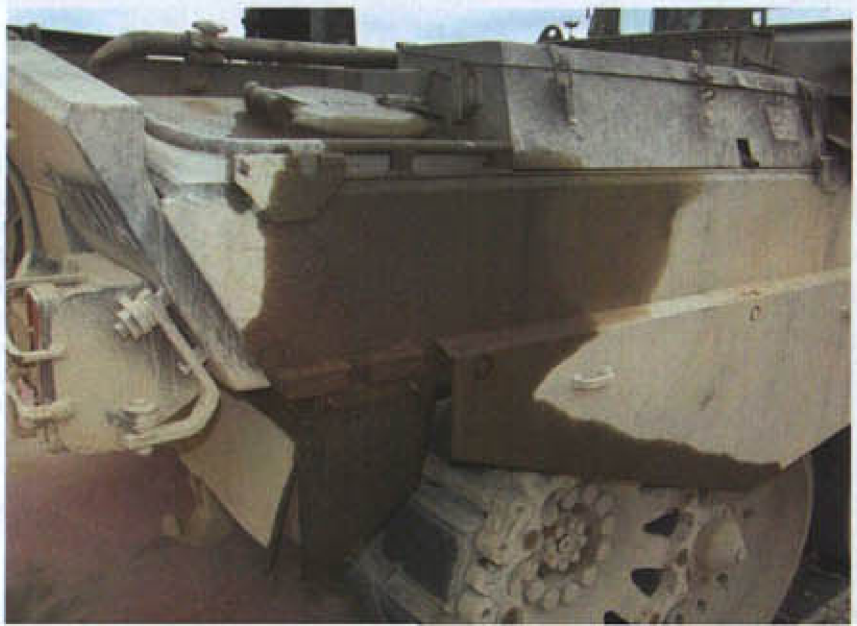


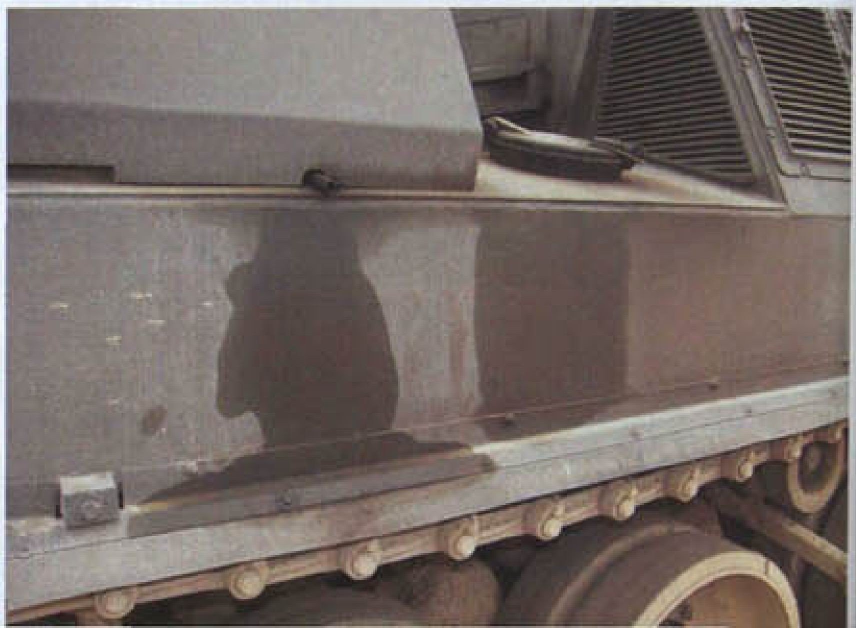
Sprocket teeth will rust quickly if not used for a length of time, as on the 2S1.

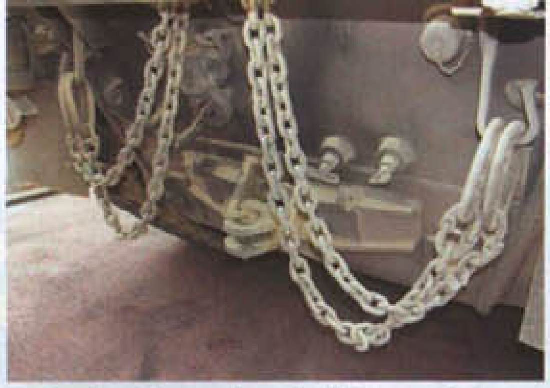


There is a small amount of oil seepage around this filler cap, which has been absorbed to some extent by the coating of dust.

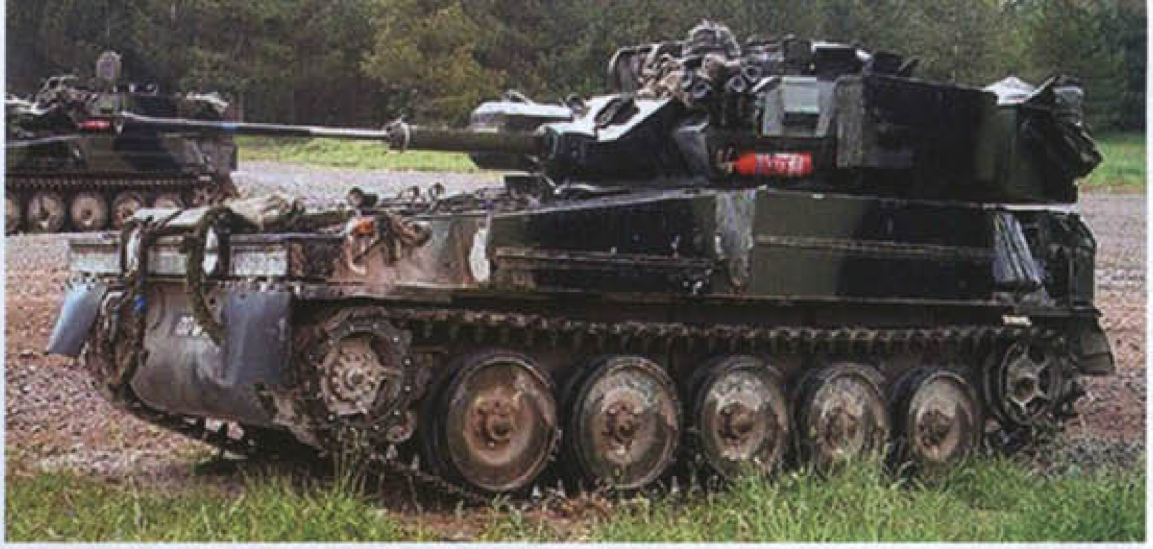
BELOW LEFT: This is a classic large fuel spill caused when re-fuelling; the diesel fuel has combined with the dust to form a brown paste on the Challenger.
BELOW RIGHT: This more subtle stain on the same Challenger is caused by a much smaller amount of fuel escaping from the breather pipe.







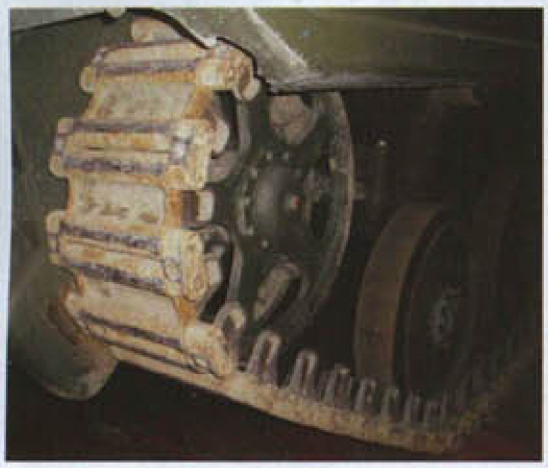
Notice how dust tends to lie thickest on horizontal surfaces.



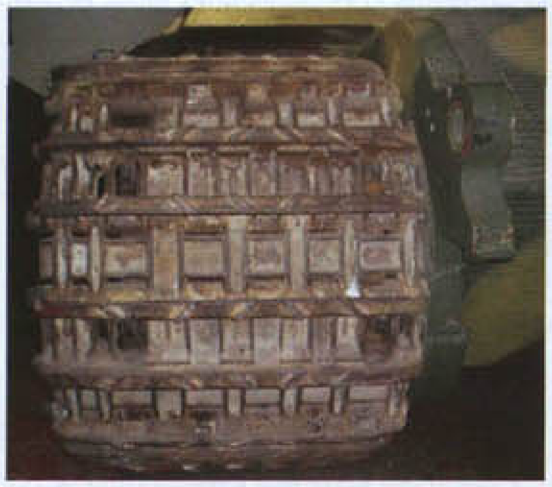
Wet vehicles will temporarily assume a glossy appearance, but not in a consistent way; notice how streaky this Scimitar has become as it dries.

Tractors and farm vehicles, haulage lorries, construction and plant are all useful - the next chance you get, have a close look at such vehicles and you will almost certainly notice something that you can use.

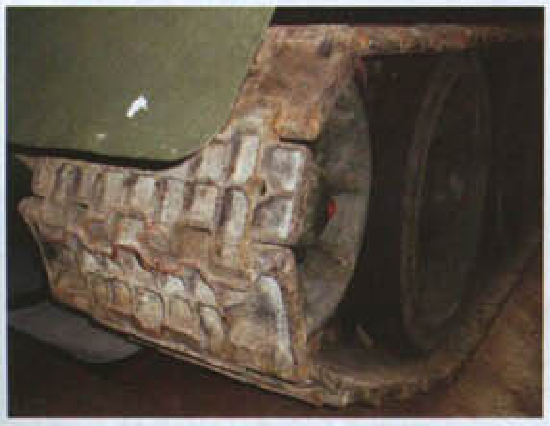
A final word of advice; when planning the effects on a model, consider the chronological order in which they would have appeared on the real vehicle, and you may save yourself a lot of needless work by avoiding covering up your early handiwork which later disappears under the final coat of dust! Oh, and the very last thing to mention is regarding my choice of title - I do sincerely apologize for the awful pun! ■



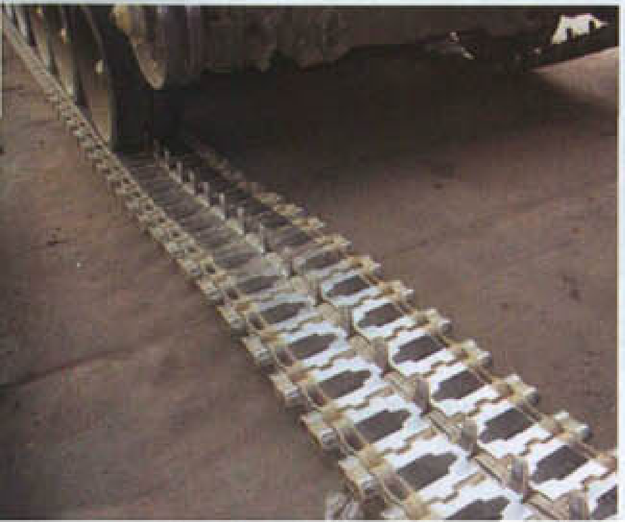
Track colours vary enormously depending on the metal used in the link: the bare metal in this case is a grey colour, not a shiny silver, nor gunmetal, nor black!

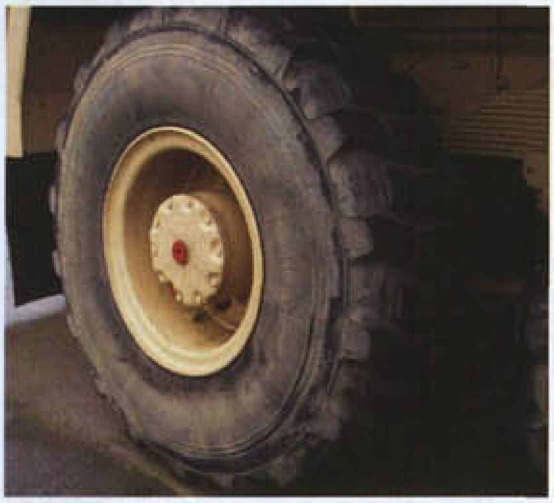


The tracks on this King Tiger are a grey/brown colour overall.

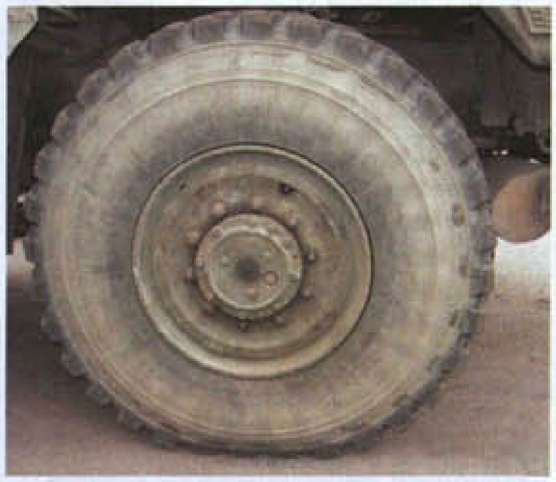


ABOVE: T-34 tracks - a shade of grey!
BELOW: However, there are exceptions with track work and this new Challenger 2 track is a nice shiny steel colour.

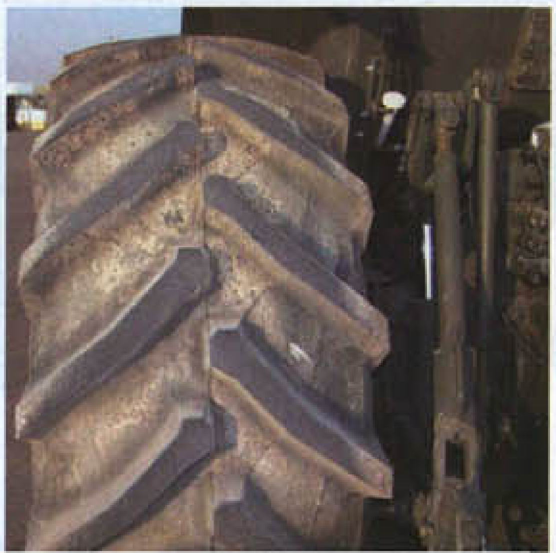


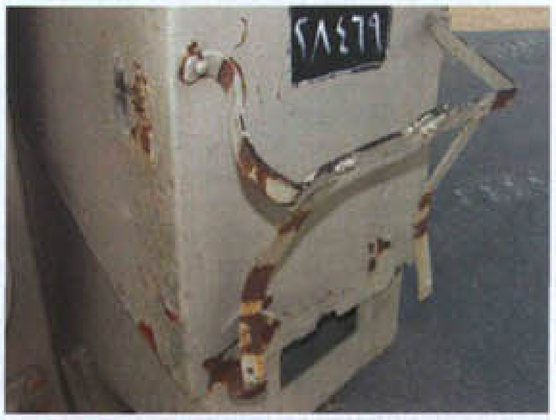


Tyres are not black; they are various shades of grey. Some light overspray from a paint job has affected the colour of this example.

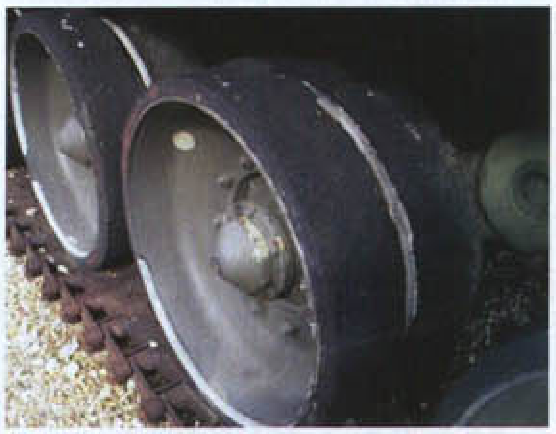


Another tyre, showing that often the darkest part of the tyre is the part that is in contact with the road surface, not inside the treads as is often shown on models. BELOW: Leave a seam on a model's tyre like this and the first prize will not come your way!

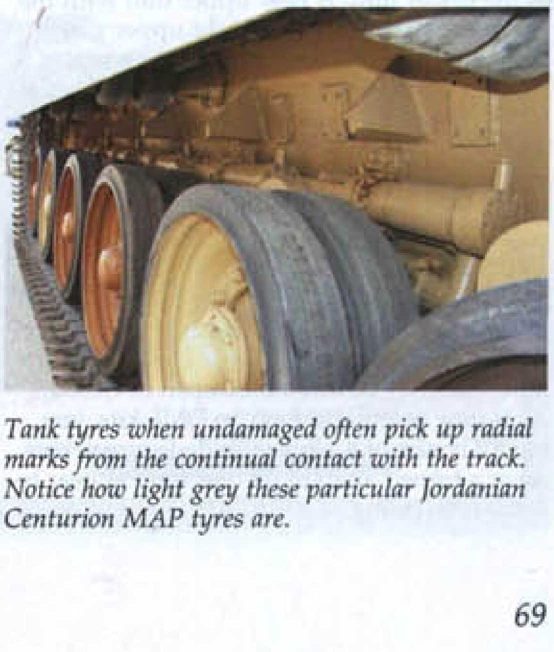




Brackets fitted to vehicle extremities are all too easy to bend, as this M113 testifies.



Rubber tank tyres often get very badly damaged after prolonged usage; this Challenger 2 used for driver training is displaying tyres near to the end of their useful life. Only those wheels needing replacing will be changed, so a mix of old and brand new on the same vehicle is perfectly feasible.



Tank tyres when undamaged often pick up radial marks from the continual contact with the track. Notice how light grey these particular Jordanian Centurion MAP tyres are.

'ATTEN-SHUN!'

New and recently released products reviewed

● The Editor welcomes product samples for review. Unless a prior arrangement has been made with the Editor review samples WILL NOT be returned. All product samples intended for review in the 'Atten-Shun!' column should be sent to:

The Editor
'Atten-Shun!'
Military Modelling
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Leighton Buzzard
LU7 2FA

● Tel/fax: 01525 370389
● E-mail: ken.jones@encanta.co.uk
editor@militarymodelling.com

1:35
Pz.Kpfw.IV Ausf.B
26
cyber-hobby.com

Read Cookie's review before entering our competition on pages 42-43... You may find the answer to what you're looking for

cyber-hobby.com

Dragon Models Ltd was originally formed as an offshoot of a Hong Kong hobby shop to provide kits that nobody else was producing. They have now spun off cyber-hobby.com as a subsidiary to produce what would have to termed 'boutique' kits - ones without a great deal of draw overall, but of interest to a select group of modellers, and one which fills a niche in many of the better collections. This is the latest kit in their series, which is why it sports two different kit numbers - 06 and 6297. And you can win one of six on offer in the competition on pages 42 - 43.

The *PzKpfw IV Ausf B* (also called the *2 serie Begleitwagen [BW] SdKfz 161)* was in production from April to September 1938, and only a relative handful were produced - 42. It made a number of improvements to the Ausf A, namely adding a new six-speed transmission, heavier frontal armour (30mm), one-piece hatches for the driver and radio operator/bow gunner, and a straight, single-piece upper glacis. Numbers were too small to have any major impact on German forces or tactics, but they did continue in service until about 1943 when attrition and being worn out basically removed them from the inventory.

This kit basically plays off the latest version of the *PzKpfw IV*, the *Ausf D* kit, and makes corresponding changes to the hull and details.

Around 59 parts are completely new, mostly dealing with the specific features found on the *PzKpfw IV Ausf B* that differ from the previous 'D' model kits. This concentrates on the turret and the front section of the upper hull. A new upper hull with the one-piece hatches and straight upper glacis plate is provided, along with the internal mantlet gun mount and fittings for the turret.

The rest of the model is similar to the 'D' kit. As before, the model has a wealth of detail. A pretty substantial basic turret interior and basket are included, and all hatches are separate pieces with interior detailing. The cupola now consists of an amazing 30 parts with options to display the visors either open or closed, as well as the hatches open or closed. All small details such as pistol ports and access hatches are separate and may be assembled open or closed. As is now pretty common on DML kits, you have a choice of a 'slide moulded styrene barrel or a turned aluminium one. Both appear to come with rifling.

The running gear is no less detailed. For example, the driver's assemble nearly in the same manner as the original: core sections, toothed rings with 12 separate bolts each, and caps and spindles - each one requires 31 parts and a LOT of patience. Bogie assemblies still consist of 18 parts each. The same 'Magic Track' with 144 links per side of snap-together tracks is provided, but as I noted with the previous *PzKpfw IV* kit they are 'handed' with the pinheads on the inside and the 'keepers' on the outside. They are bagged separately, but you will have to use a magnifier to tell which side is which. A jig for setting 'droop' is also included. One-piece 'slide moulded' idlers are again included, as well as the normal two-piece kind.

Only a single hull is provided, which is correct; the 'B' did not have any options as built. The drivers appear to me at first glance to be about the right height; e.g. the sprocket faces (not the tops of the teeth) look to be level with the tops of the return rollers.

As with nearly all DML kits, you have the option of using styrene parts for all assemblies or replacing many of them with etched brass. The main ones where most modellers will probably opt for the latter are the louvres and slats on the rear engine deck, which replicate the earlier pattern of the 'B' with a choice of either styrene or etched brass for the 'blades' in the side louvres.

As there is only one version of this kit, the typically busy DML directions are not as confusing as those with the 'three in one' kit of the 'D'.

A total of four different vehicles - all in *Panzergrau* with no camouflage illustrated - are offered in the finishing instructions. Your choices are either the 8th Company, 1st Panzer Regiment, 1st Panzer Division, Poland 1939; 4th Company, 1st Panzer Regiment, 1st Panzer Division, France 1940; 6th Company, 19th Panzer Regiment, 12th Panzer Division, Russia 1942; or 6th Company, 3rd Panzer Regiment, 2nd Panzer Division, the Balkans 1941. This is a 'targeted' decal sheet so the numbers all come preformatted, and no 'number jungle' is provided with the kit.

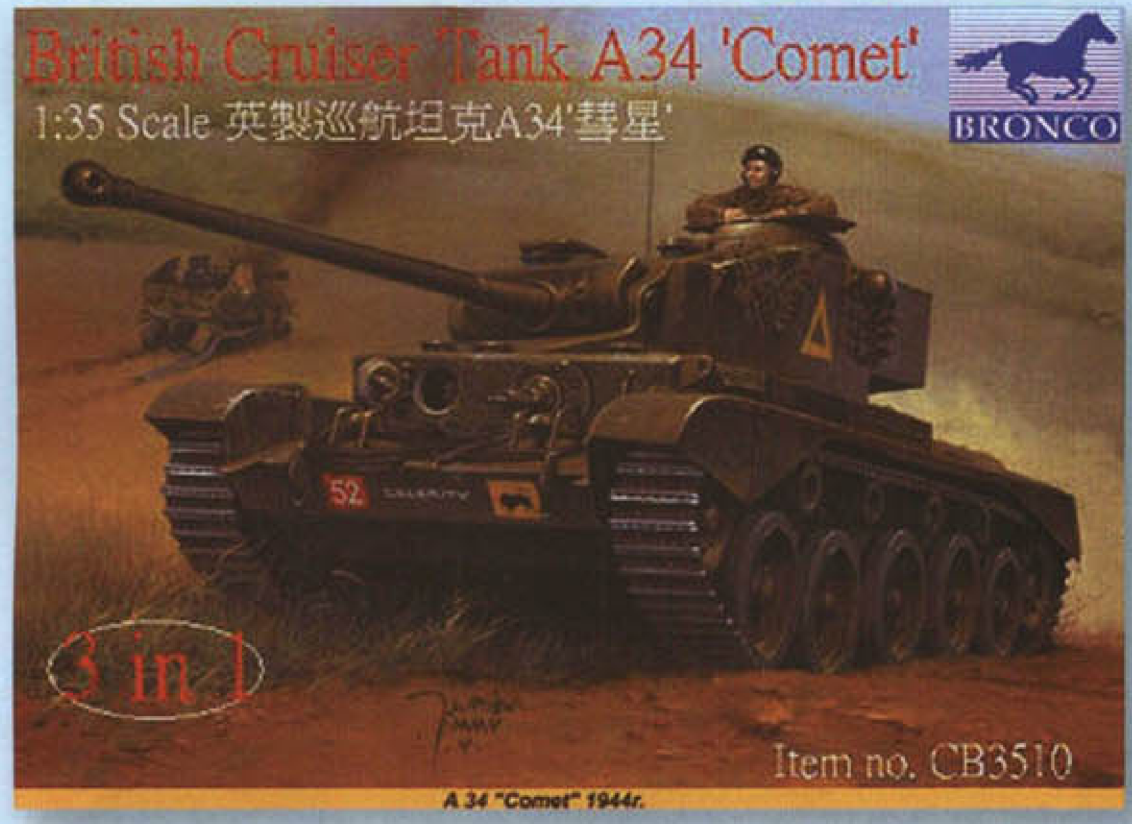
Overall this is another lovely kit, but as noted it is the 'boutique' version and Panzer IV fans that want one will have to scramble.

Thanks to Freddie Leung for the review sample.

Cookie Sewell

Available direct on the Internet at cyber-hobby.com

1:35
Pz.Kpfw.IV Ausf.B
06


British Cruiser Tank A34 'Comet'
1:35 Scale 英製巡航坦克A34'彗星'
BRONCO
3 in 1
Item no. CB3510
A 34 "Comet" 1944г.

Bronco Models

The British Cruiser Tank A34 Comet was the last of the British Cruiser tank line. Using the same package of engine, transmission, Christie suspension and general layout as the Cromwell, it differed in many details, not least, of which in mounting a new 77mm gun giving it better anti-tank firepower compared to the earlier 75mm.

Although it was intended that they would enter service in early 1945 and 29th Armoured Brigade of 11th Armoured Division handed in its Shermans late in 1944 ready to convert to the new tank, this was delayed due to the German attack in the Ardennes and it was to be March before they were ready for action. By the end of the war only this one Division had been re-equipped, although too late to see extensive fighting it was generally well received.

Following the end of the European war, more units re-equipped but the Comet's days as a front-line tank were numbered as the introduction of the Centurion relegated it to secondary roles including with the Territorial Army well into the 1960s. Small quantities were sold to other countries, and some served on even into the early 1990s.

Bronco is a newcomer to the plastic kit world, although this kit (kit CB-3500) has been expected for some time after it was announced on the 'World Wide Grapevine'. Now we have it and can see what we have got. Breakdown of parts is sensible, with a lower chassis 'tub', main hull parts on one sprue, turret on another, various items on a third and two identical sprues with suspension and wheels. These parts are neatly moulded in green plastic, knockout pins are mainly placed where they will not be seen unless the model is to be completed opened up.

Surface detail is good; there is a slight texture to the armoured parts though not to the cast gun mantlet which does, however, have casting numbers moulded onto it. There are separate crew and main engine deck hatches. Main gun complete with recoil cylinders, guards and hand wheels is provided, but no other interior details or crew figures.

Optional parts are included, with one style of idler wheels included as resin parts and various details come in etched brass, including a two-part 'Normandy Cowl' over the exhausts as an alternative to a one-piece kit item, as well as the fishtail exhausts fitted to later vehicles and the multi-barrel smoke dischargers fitted to tanks post-war. Tracks are black, soft-plastic band type with a length of cord provided to use as a towrope with moulded plastic eyes.

There are some good touches, such as the chamfering in the lower edges of the mudguard side pieces and the inner edges of the exhaust cowl, choice of a plastic or etched parts for the radio aerial base cage and a neat step-by-step guide to folding the etched commander's sight vane. Against that, there is no cover for the mantlet which was used on some vehicles including ones covered by the decal sheet. The mesh cover over the exhausts is moulded as part of the main upper deck part, it is well enough represented and this is not a big issue if modelling a tank with cowls, but if you want to do a vehicle without and wish to add your own make or maybe in future an aftermarket etched mesh, it may mean some delicate cutting. Also, no mesh is provided for the sides of the engine compartment sides in any form I could spot, nor are the spare track links carried on the turret side included.

While there were no major differences between Comets, there were some minor variation in exhausts and styles of idler, road wheel and return rollers to finish the kit as one of the '4-in-1' of the blurb on the box. Care will be needed following the instructions to ensure the correct combination of parts is used for each. Choice of idler and exhausts are included, but some minor conversion work and detailing could be needed as well.

Decal sheet and colour scheme details cover the several different options. One is CELERITY with 3RTR in Germany, 1945 as shown on the box top. It was photographed by its driver and his son has provided an interesting account of its wartime history while details of its post-war use are on a separate detail sheet. Two other tanks COBRA and CRUSADER from the same unit are also catered for, using the same basic unit markings with suitable names and serial decals. The option for IRON DUKE IV of 1RTR is dated April 194, this is not correct as Comets were only issued to this unit post-war and it is depicted as it appeared on a victory parade in Berlin in September 1945. Fourth option is for one of three tanks, again with 3RTR, but post-war in Hong Kong, here is both a misprint on the instruction sheet with the date, which should be around 1950, and more seriously the unit signs are not entirely accurate, plus the local-style registration number, which these tanks carried, is not included. Final scheme offered is one of the tanks bought in the 1960s by Finland and used for training. Several different brands of paint are recommended.

Overall, this is a welcome addition to the somewhat limited stable of plastic 1:35 British WW2 vehicles. Price is perhaps a little high, the similarly sized Tamiya Cromwell and Centaur sell for less and we do not get the 'instant spares box' that comes with, say, a Dragon Sherman nowadays. Still, it is a Comet, in plastic, in 1:35 scale, which will appeal to those wanting to model it. It should build up into a reasonable replica out of the box and it is hoped to provide a more in-depth study of this kit in a future issue. *(We will be! Ed.)*

Peter Brown

Price £29.99 (rrp in UK)
Bronco Models, Workshop 16A, 25/F Well Fung Industrial Centre, 68 Ta Chuen Ping Street, Kwai Chung, N.T. Hong Kong
www.bronco-model.com

Comet 'IRON DUKE II' of the Westminster Dragoons c.1954.

Academy

Our First Look at Academy's M3 Lee

As we went to press with this issue, and after arrangements I made with Academy at Nuremberg, a pre-production sample of their new 1:35 scale kit of the US M3 Medium 'Lee' arrived - with more than adequate interior detail, but no engine, assembly instructions and evidence of 'slide moulding' in its production, this is very good! What follows is only a 'first look' with partial build.

Without Academy's instructions, but with the aid of a US TM on the type for guidance, especially for the interior parts, I was able to assemble most of the hull and some of the turret basket before magazine deadlines prevented any further progress.

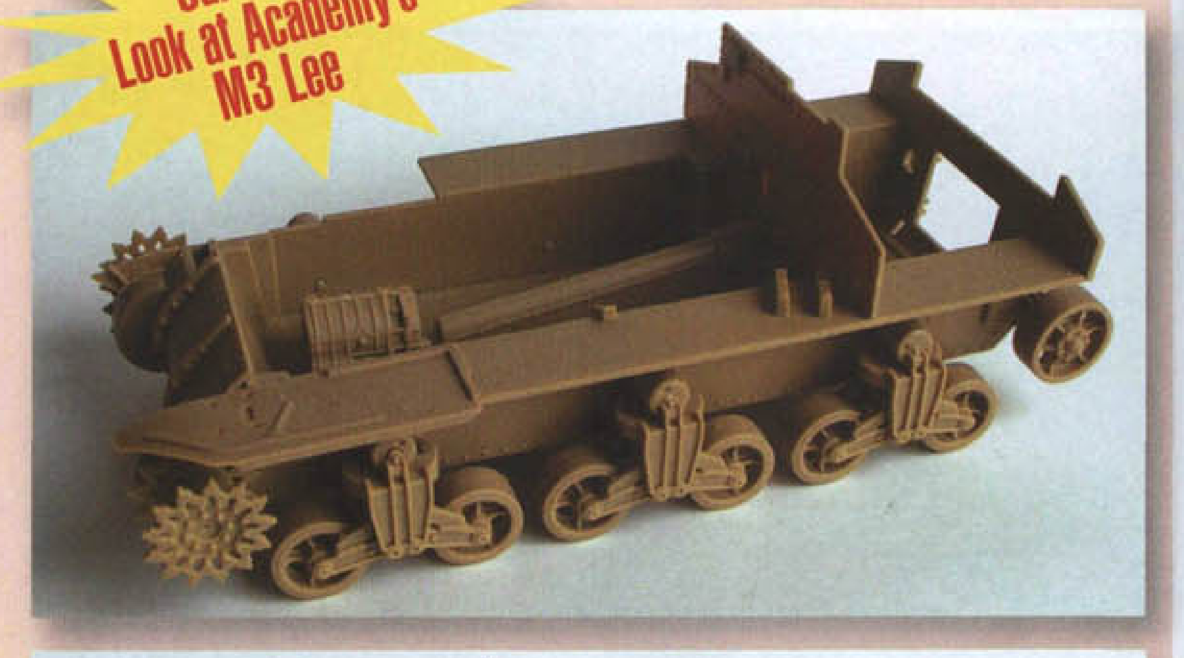
I know that Steve Zaloga helped Academy with US Ordnance drawings and information, plus along with Cookie Sewell, access to survivors for measurements, so Academy had the very best 'roots' from which to prepare their model. Using a scale rule, verniers, etc., the model does come into line with published dimensions and any slight deviations, a millimetre here or there, will only be 'nit picking' - it 'looks right' even in its partially assembled form.

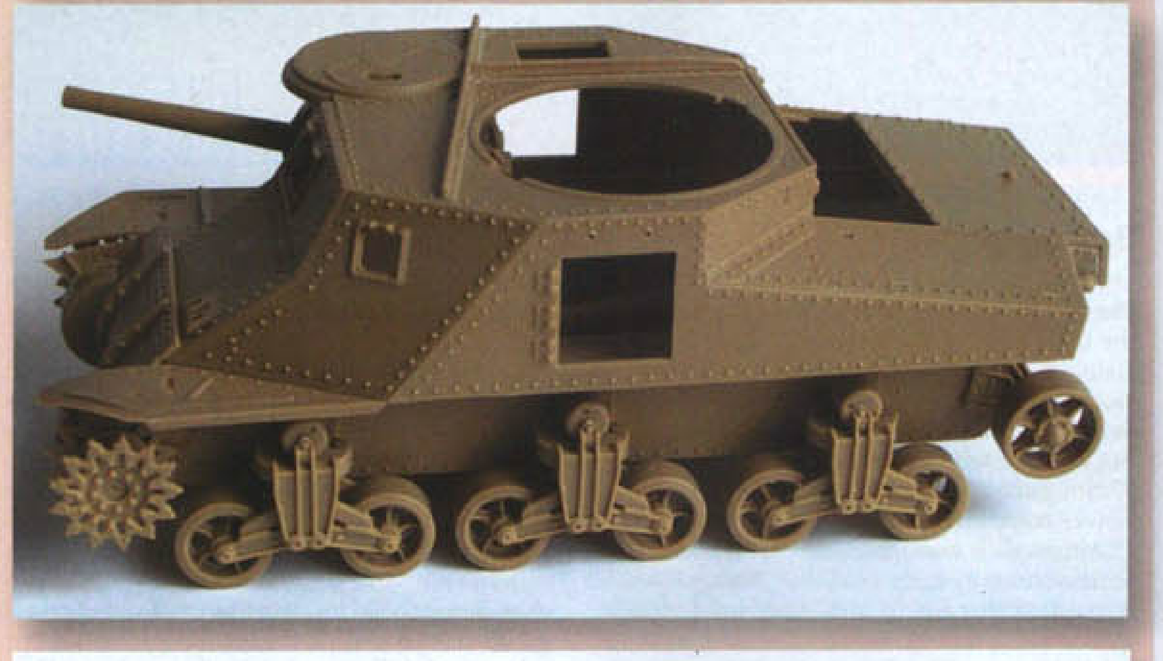
I did notice on first examination that there was a rivet missing (sad man) in front of the left hull door - but with the sequence of rivets and their symmetric spacing interrupted it really is noticeable. The spacing of the vertical rivets on the hull side (following the line of the brackets for the internal firewall) are wrongly spaced and do not line up with the part that slopes up to the engine deck. I have told Academy about these points and hopefully they will be corrected. I did not check all other rivet patterns - only the ones that were immediately apparent. Fit of parts, as with any early first mould pressing, is exceptional. Pieces for the hull will hold together very easily and where the joints meet they can be pressed into hair lines.

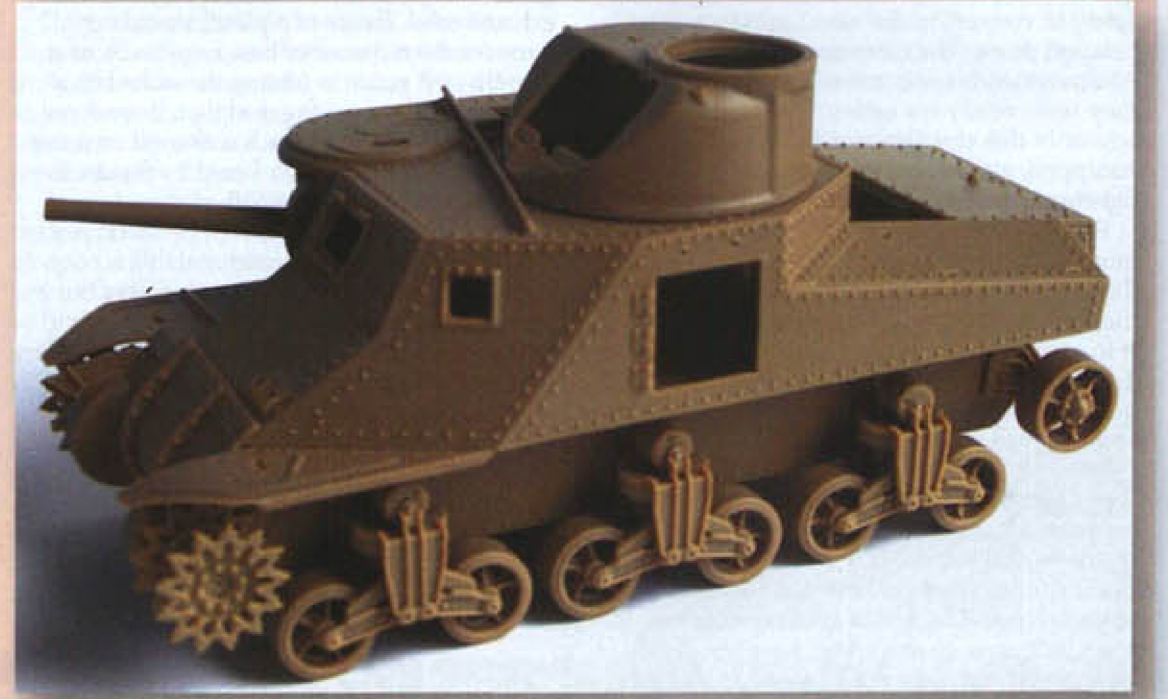
The common Academy sprue for M3/M4 suspension parts (A) is provided from which you need the spoked wheels, return rollers and idlers, along with a new sprue (F) for sprockets and the M3 VVS bogies and brackets. These are articulated when assembled, but I would always fix front and rear bogies anyway, unless undulating ground on a diorama called for alterations to the geometry.

The tracks are moulded in a hard and unyielding flexible plastic as bands and I don't like them. I would have preferred link and length or separate links for this type of running gear. The outer teeth are correctly positioned linking the pads, but the plastic is too rigid and doesn't bend or form around the sprockets very easily.

Someone has done their homework on the interior and perhaps listened to remarks about the flawed interiors on their M3 light tanks. The driver's position, over the transmission housing, has the seat, levers, foot pedals and the cross-hatched plates for the sub floor provided, with an instrument panel and the radio sets to his side. The 75mm gun (choice of M2 or M3 plastic 'slide moulded' barrels) has a separate breech block, breech guard, gunner's seat, sight routed through the sector plate on top of the sponson and it moves with the gun's traverse. The front of the ammo bin with the bases of the shells showing, plus lots of other 'bits' around the gunner's station are provided. There's even a box of Thompson submachine gun drum magazines! Of course you could add more, like wiring, and any bits they've missed, especially if you show the model with all hatches opened up. I just didn't have time, without instructions, and only the TM, to locate and fully identify all the interior parts.







The turret has a complete basket and you have 48 separate 37mm rounds of ammunition to attach to the clips on its side walls. The basket is detailed with seats, electric traverse motor and other fine details which I haven't completely sorted out yet. We'll be hearing more on this fine kit in future issues.

Academy kits are imported into the UK by Toyway Ltd., PO Box 55, Unit 20 Jubilee Trade Centre, Jubilee Road, Letchworth, Herts SG6 1SG. Tel: 01462 672509.
toys@toyway.co.uk

Ken Jones

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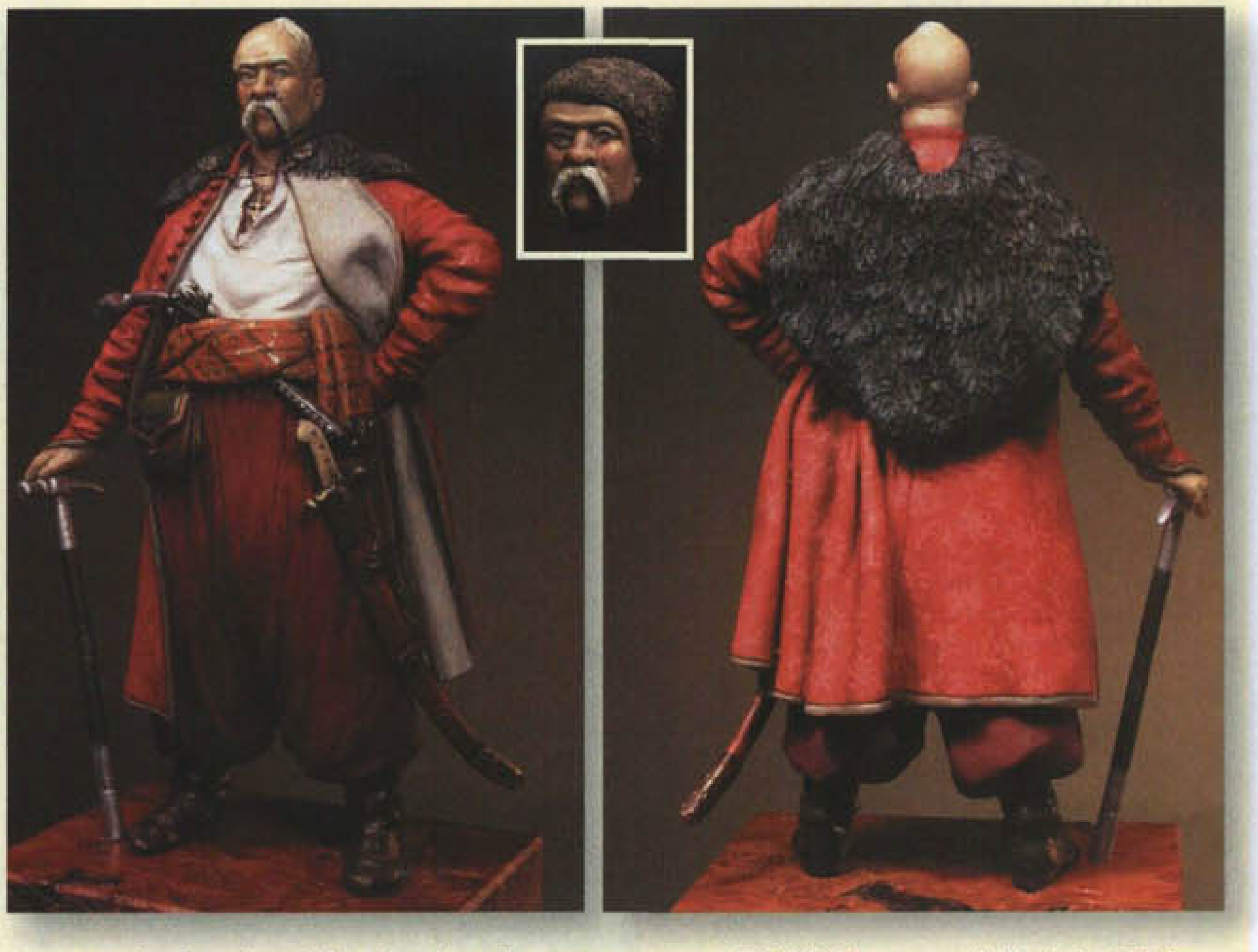
PiLiPiLi



The arrival of a PiLiPiLi kit for review is always an occasion for me, because they are always that little bit different in choice of subject. Admittedly, there are plenty of Native North Americans in the PiLiPiLi range, but they are all different as miniature figures, and everyone commands attention. However, I digress, and the latest miniature figure kit from the talented hands of Le van Quang is a Ukrainian Cossack c.1650.

The figure is beautifully cast in kit form, in 11 pieces, in light grey polyurethane resin with a nice matt finish as only Quang seems to achieve. A choice of two heads is provided - the same features albeit, but one wears a fur hat, typical of Cossack attire. Some parts have small blocks, necessary to the casting process, to remove and these can be pared away cleanly with a new blade fitted into the scalpel or model knife. Just don't use any abrasive papers or files unless absolutely necessary on this resin.

The figure represents a high ranking Cossack (or Hetman) of the Zaporozhian Cossacks, who lived on the southern Steppe of what is now modern Ukraine. Quang's box wrapper information tells us that they played a decisive role in 17th century European 'geopolitics' among their powerful neighbours the Lithuanian Poles, the Crimean Tartars and the Ottoman Turks and this is apparent from their clothing and weaponry.

The Hetman carries a war hammer, scimitar and a pistol thrust through his sash. The miquelet type flintlock on the pistol is even recognizeable showing the attention to fine detail and careful casting from the masters, in which Quang excels. The choice of head gives the modeller the opportunity to assemble what it is preferred, I prefer the bald head with scalplock, although the fur cap set at the jaunty angle seemingly effected by Cossacks will be more appealing to some. Whatever, it is a high quality model and from a period and subject not usually chosen by figure designers which heightens its appeal for me.

PiLiPiLi kits are available in the UK from Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ. Tel: 01304 206720. Fax: 01304 204528.
sales@historex-agents.co.uk
www.historexagents.com

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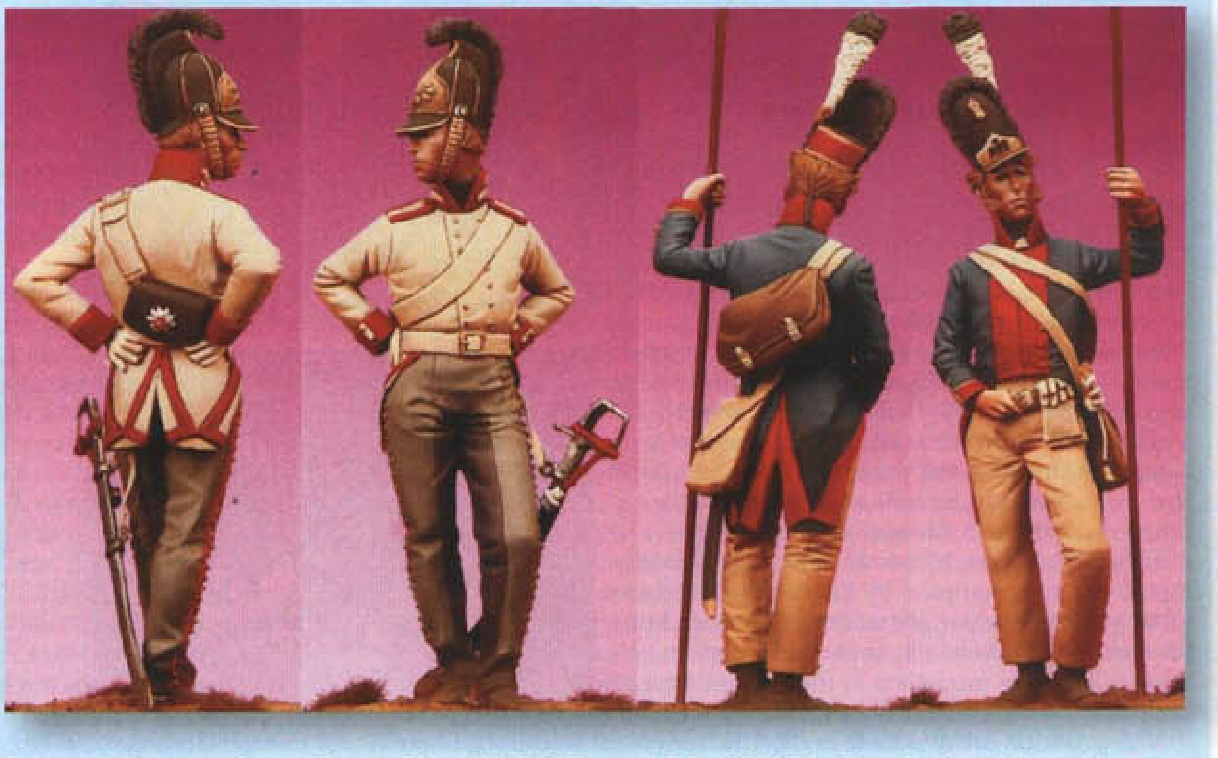
Price £31.50 (+ 75p p&p from Historex PiLiPiLi, Belgradestraat 68, B-2800 Mechelen, Belgium. Pili.pili@skynet.be http://www.pilipili-miniatures.com

Art Girona



Art Girona figures are produced in Girona, in Spain and stocked by Historex Agents in the UK. The range is quite extensive and subjects cover mainly the Napoleonic period.

Two recently released 54mm white metal figure kits sent by Historex for review are Prussian subjects; GN-40 Soldier of the Guard du Corps, Prussia 1808-13 and GN-41 an NCO Grenadier of the 3rd Kropff Infantry Regiment, Prussia 1806.

The Guard du Corps soldier wears the fur crested, leather Prussian helmet with tall crown fronted with a brass plate. The uniform is white faced red. The Grenadier wears a false-fronted fur edged cap with equally tall plume. He carries a pike, for which a brass rod is provided that locates into a cast white metal point. Both are casually posed, representing soldiers at rest, which adds greatly to their appeal,

The kits were designed by Krisztian Bodi and are cast in white metal, in kit form, with cast metal bases included. Detail is crisp and the finer points appear sharp and well defined as befits a quality figure.

Art Girona figures are available in the UK from Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ. Tel: 01304 206720. Fax: 01304 204528.
sales@historex-agents.co.uk
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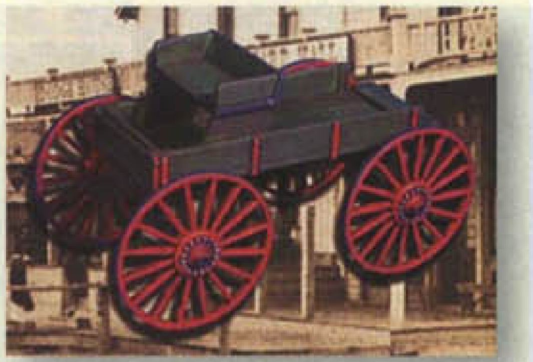
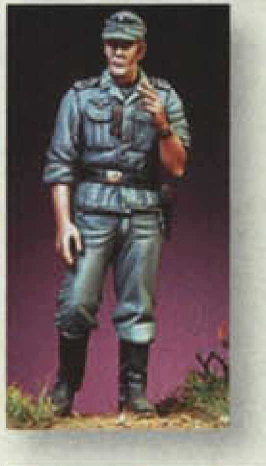
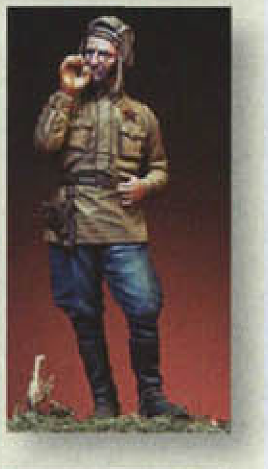
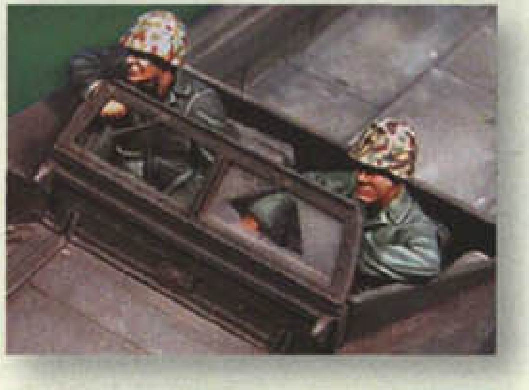
Price £14.25 (+ 50p p&p from Historex) Art Girona Plaça del Vi 8 baixos, 17004 Girona, Spain. Tel: 34 972 204 134. Fax: 34 972 411 604. artgirona@interbook.net www.girona-soft.com/art.girona/

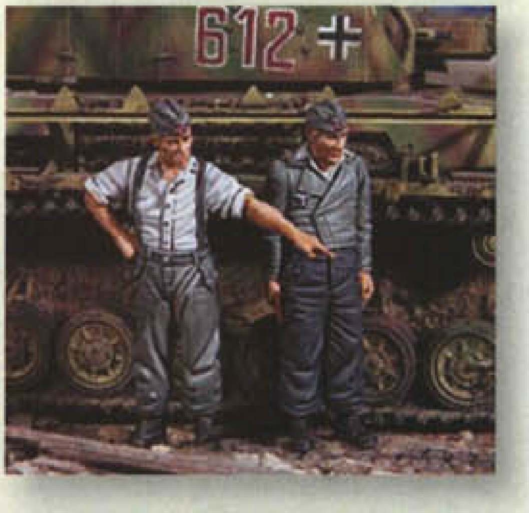
The VLS Corporation

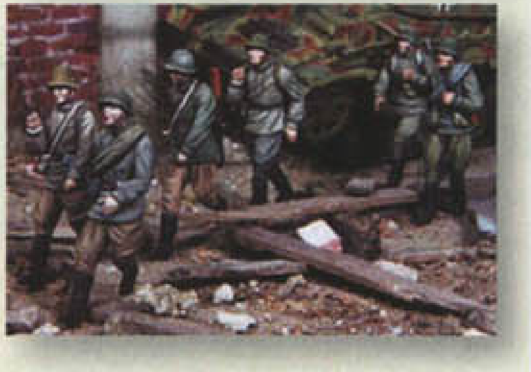












Some samples of new releases from the VLS Corporation made into their various series have been received direct from the USA for review.

First up is a new 1:32 scale vehicle for the Streets of Laredo range SR32014 Buckboard. This four-wheel vehicle was the equivalent of its era to the modern 'pickup' - seats up front for two with a loadbed at the back for 'goods' and all pulled by one or two horses. Patterns for the buckboard were made by Ben Jakobsen and when you think of it this 1:32 scale model has uses other than in the 'Wild West'. Perhaps VLS production will introduce a horse and suitable drivers and passengers for the buckboard. Does anyone know why it was called a buckboard?

The Platoon range of 1:35 scale cast polyurethane resin figures is a joint venture between VLS and top Italian figure manufacturer Pegaso, where the figures are produced in the USA at VLS's facility or in Italy at Pegaso's. Platoon figures (the ones produced in Italy) are also available in the UK from Historex Agents from their tie in with stocking Pegaso products.

PT-021 is a Soviet AFV crewman - 'Russian Tanker in Spring Dress 1940-42' sculpted by Kwangyeol Lee. He's in casual pose taking a drag at his cigarette and would look good posed against a 1:35 scale Russian AFV to give it some idea of scale.

PT-022, sculpted by Tony Williams, is a German army NCO - erroneously titled, with a surplus 'H', as 'Hunteroffizier Heer 1942-43' on the box. He's walking and smoking a cigarette. In our health conscious times it should be noted that just about everyone, especially soldiers, smoked cigarettes during the Second World War.

On to Warriors figures where three of the latest additions to this long standing and comprehensive range of miniatures are; WA35590 USMC DUKW Crew, WA35596 German Tank Mechanics (Summer) and WA72011 Russian Infantry WWII.

The DUKW Crew were sculpted by Bill Chilstrom and form the seated driver and passenger for the vehicle, adding much needed front end interest for the Italeri kit, where as ever, they will offer some indication of the scale of the vehicle. They could, of course, form the crew of other vehicles where seated figures are required.

WA35596 comprises two figures in different forms of attire intended to be German mechanics. One figure is pointing downward and, with his companion alongside him, proves my laboured point about my total dislike of 'single, stand alone pointing figures', that have no one to confide to at exactly what they are pointing at. However, this pair work as a duo and once again would look good near a vehicle and offer that miniature human indication of scale to an otherwise bare and 'lifeless' display.

WA72011 has six 1:72 scale marching Russian infantry figures sculpted by Bill Chilstrom and what a fine job he's made of them. Produced in kit form - separate heads, arms and weapons these will please modellers in the smaller scale, hopefully more are due.

VLS products are available in the UK from Net Merchants, Scale Model Centre, Unit 53, Ledcom Bank Road, Larne BT40 3AW. Tel: 0845 226 8266. Fax: 02828 267977 www.netmerchants.co.uk and LSA Models, 151 Sackville Road, Hove, East Sussex BN3 3HD, Tel/fax: 01273 705420. lsamodels@mcmail.com www.lsamodels.fsnet.co.uk

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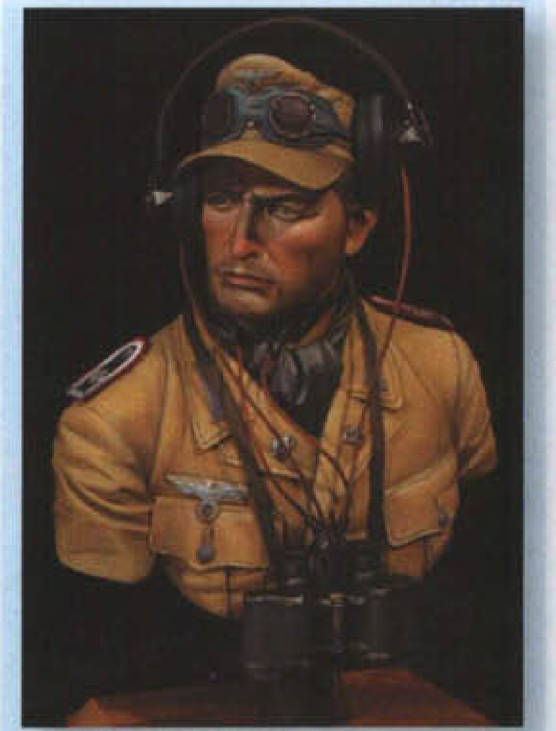
Prices: UK Net Merchants/LSA Models

The VLS Corporation, Lincoln County Industrial Park, 1011 Industrial Court, Moscow Mills MO63362 USA. Tel: 636-356-4888. Fax: 636-356-4877. sales@modelmecca.com www.modelmecca.com



Young Miniatures

A newly released 1:10 scale bust from Young Miniatures of Korea represents a *German Deutsches Afrika Korps* officer - an armoured vehicle commander to be precise. Designed by Young B. Song, who also painted the bust shown in the accompanying illustration, the figure has the headphones and binoculars, plus shoulder rank boards, status symbols of an AFV 'commander'.

Cast in white metal, the bust is supplied in kit form, head, cap, upper torso with separate jacket sleeves, headphones, throat microphone, binoculars and shoulder boards. Copper wire is provided for the leads from the headphone receivers and throat microphone pickups.

An etched metal fret is included to make up the sliding adjusters for where the earpieces attach to the headband on the headphones. A printed slip is provided in the kit showing how to assemble this - which helps a lot. The drawing is very necessary especially if you don't know how these items are supposed to go together.

The goggles are up on the cap and have sufficient of the frames proud of the lens to run in some varnish, or however you personally handle such things, to get a glass-like appearance. The box top illustrations show these to be a brown colour which could represent the brown tinted lenses fitted to *Afrika Korps* goggles. Rommel always wore his 'looted' British gas goggles, but probably more as a status symbol on his General's cap rather than these heavier standard issue types which are commonly seen in photographs of DAK soldiers and panzer crewmen.

The bust is not cheap in the UK, but it's bound to be another winner for Young Miniatures who are available in the UK from Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ. Tel: 01304 206720. Fax: 01304 204528. sales@historex-agents.co.uk www.historexagents.com

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Price: £33 (+ £1 p&p from Historex Agents)
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Cammett Ltd, newcomers to our column, are suppliers of model making products, who specialize in finishing products. They stock IWATA airbrushes and compressors, Lifecolor, Tensocrom White Ensign, Colourcoats paints and Alclad. Tools, such as scale rules, cutting boards, knives and brushes, glues, 'hold and fold' etch tools, masking, preparation tools and fillers, plus Scale Calibre Tubing. They can offer specialist help, advice and courses from their mail order operation based in Herefordshire.

Robin Carpenter is an enthusiastic modeller and he set up Cammett especially to cater to other enthusiastic modellers. At the recent Sword & Lance show in Darlington he passed some samples to me of the Lifecolor and Tensocrom ranges, produced by Astromodel in Genoa Italy.

The Lifecolor sets of acrylic paints are matched to official designations, UA, RAL, FS, etc., and I was given a couple of the 'Camouflage Sets' to try - German WWII Tanks Set 1 and NATO M.E.R.D.C., each containing six acrylic colours in plastic pots. They perform very well in the airbrush, for which they are designed, but can also be brushed on for some effects.

Tensocrom are called 'Active Surface Agents' and consist of pigments dissolved in a special medium that can be applied to models as a glaze for the special effects of weathering, adding age, shading or whatever. It can be sprayed or brushed on, over the painted surface. It is water soluble, but experimentation is advised before trying it on the model. Set 1 contains Medium, Sand, Earth, Grass, Rust 1 and Rust 2. Set 2 has Oil, Smoke, Kerosene, Fuel, Burnt Brown and White Oxide.

Cammett accept orders on line by post or phone, and a full catalogue of the ranges they stock is available - or you can look them up on their website.

Ken Jones

Prices Lifecolor and Tensocrom £13.95 each

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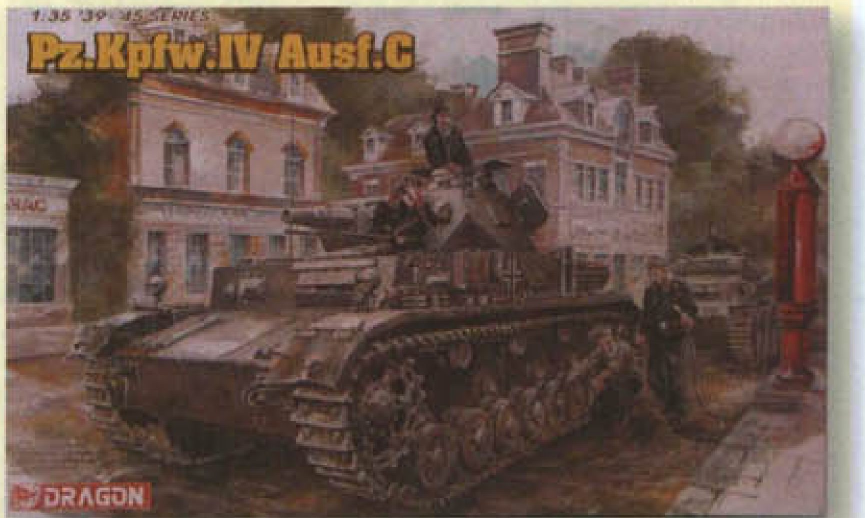
Dragon Models Ltd


1:35 '39-'45 SERIES
Pz.Kpfw.IV Ausf.C
DRAGON

With this kit (No. 6291), DML will have now offered all of the versions of the Panzerkampfwagen IV series of tanks with the exception of the progenitor, the Ausf A in 1:35 scale.

The PzKpfw IV Ausf C (*3 serie Begleitwagen [BW] SdKfz 161*) was in production from September 1938 to August 1939 and saw 134 of an originally planned 300 built. It again improved over the *Ausf B* with new motor mounts, an improved turret race, a new gun mantlet, and an armoured sleeve for the coaxial machine gun. After the first 40 were built the carburettor was changed to improve engine performance. Starting in 1940, some of the tanks also received appliqué armour on their hull and superstructure sides.

As it was the first version to see production of more than 100 vehicles, it saw a change in the TO&E structure of four to six *PzKpfw IV* in light tank companies and 14 vehicles in medium tank companies. The *Ausf C* remained in service through 1943, but in steadily decreasing numbers due to attrition.

This kit uses most of the new parts created for the *Ausf D* kit and the cyber-hobby.com *Ausf B* 'boutique' kit on page 70. In regard to the latter, it uses nearly all of the new sprues and only changes a few of the parts out, namely the mantlet and associated parts on Sprue Y.

Like the *Ausf B* kit, 59 parts are completely new, mostly dealing with the specific features found on the *PzKpfw IV Ausf B* and *C* that differ from the previous 'D' model kits. This concentrates on the turret and the front section of the upper hull. A new upper hull with the one-piece hatches and straight upper glacis plate is provided, along with the internal mantlet gun mount and fittings for the turret.

The rest of the model is identical to the 'B' kit. As before, the model has a wealth of detail. A pretty substantial basic turret interior and basket are included, and all hatches are separate pieces with interior detailing. The cupola consists of an amazing 30 parts with options to display the visors either open or closed, as well as the hatches open or closed. Pistol ports and access hatches are separate and may be assembled open or closed. As is now pretty common on DML kits, you have a choice of slide-moulded styrene or turned aluminium barrels.

The running gear is very detailed, for example, the drive sprockets assemble from 31 parts! Bogie assemblies still consist of 18 parts each and the same 'Magic Track' with 144 links per side of snap-together tracks is provided and one-piece 'slide moulded' idlers are again included, as well as the normal two-piece kind.

There is the option of using styrene parts for all assemblies or replacing many of them with the etched brass supplied in the kit

A total of six different vehicles are offered in the finishing instructions. The choices are: 6th Company, Pz.Rgt. 31, 5th Panzer Division, France 1940 (grey); 4th Company, Pz.Rgt. 1, 1st Panzer Division, France 1940 (grey); 6th Company, Pz.Rgt. 11, 6th Panzer Division, France 1940 (grey); 8th Company, Pz.Rgt. 10, 8th Panzer Division, Eastern Front 1941 (grey); Pz.Rgt. 22, 21st Panzer Division, Normandy 1944 (green stripes over Panzerbraun); and Pz.Rgt. 22, 21st Panzer Division, Normandy 1944 (Panzerbraun). The numbers on the decal sheet are all preformatted.

Overall this is another lovely kit, but it may prove confusing with the profusion of kits offered - types B, C, D, and two Es! Thanks to Freddie Leung for the review sample.

Dragon Models are imported into the UK by The Hobby Company Ltd., Garforth Place, Knoll Hill, Milton Keynes MK5 8PH.
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enquiries@hobbyco.net

Cookie Sewell

Price tba

Dragon Models Ltd., 603-609 Castle Peak Road, Kong Nam Industrial Building, 10/F, B1 Tsuen Wan, New Territories, Hong Kong.
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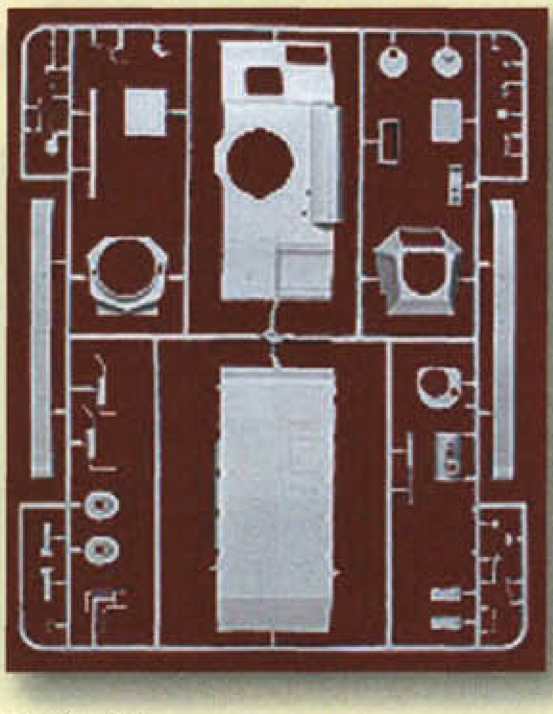
MiniArt's first 1:35 scale injection moulded plastic tank kit, an early production T-70M light tank, has been issued in Soviet and German versions. Each kit contains the same tank, with a Russian or German crew in winter dress and markings as appropriate. Five crewmembers are provided, which is very generous for a tank with a crew of two! MiniArt has announced a T-70M Late Production w/Crew, which will be the same kit with a different mantlet and driver's hatch - and hopefully a different crew. They're also planning a T-80 - an update of the T-70M produced in very small numbers - and the SU-76M that was based on a T-70M hull with extra road wheels.



The T-70M was an upgrade of the T-70 tank that had started to replace the T-60 in early 1942. In typical style the Soviets made little differentiation between the T-70 and T-70M, calling both the T-70. The first T-70Ms were issued in autumn 1942 and internally the twin-engine layout was improved and upgraded. They had a different turret (which also appeared on late production T-70s) and 'Mark 4' periscopes on the driver's and commander's hatches (which did not appear on the first few T-70Ms). The T-70 used the tracks and running gear of the T-60, but every T-70M had wider track and wider road wheels and return rollers.

The T-70 and T-70M were simple to mass-produce as they used truck automotive parts so large numbers - 8,226 - were churned out. In 1942-3 the T-70/70M was the second-most numerous Soviet tank, but it's relatively weak armour and 45mm gun made it an easy target for German medium tanks. In October 1943 the Soviet Union ceased production of light tanks and the T-34 replaced them in Red Army tank units. The T-70M was issued to Czech, Estonian and Polish units and Soviet SP Gun Regiments. It remained in service until 1948.

MiniArt have excelled themselves and produced an outstanding little kit. All dimensions and angles are correct to the nearest millimetre. The lower hull is moulded as a highly detailed tub rather than several flat plates. All parts are very well detailed and the cast and rolled armour is quite well textured.

There are two turret periscope options. Inside the turret there is a 45mm gun breech, DT machine gun and gun sight. Clear parts are provided for the periscopes and the headlamp glass. The mesh over the air intake and fan openings is provided as separate plastic parts, making the option of doing your own thing with etched mesh that much easier.

The single-link tracks are well detailed on the treads and horns, but have a pin mark on each inside end. There are extra wheels and torsion bars on the sprues for a SU-76m, which MiniArt will be releasing in the future. I'm sure it will be of the same standard as this excellent kit so after a short 'hissy fit' I've put my Dragon SU-76m upgrade project back into the box. Hey ho.

The figures provided are very good, as well designed as MiniArt's early releases, but very well moulded without a single sink mark. As with even the very best plastic figures the heads are the only weak spot. The Russians are in tank helmets, leather boots and 'schuba' sheepskin coats; the Germans have reversible winter suits, leather boots and caps. As the T-70M only had a crew of two you can ring the changes by choosing from the five provided. If you are modelling a Soviet vehicle before 1943 you should remove the shoulder boards from the Russian figures.

Markings are provided for three *PzKpfw. 743 (r) Stug Abteilung 276* in November 1944, *Verkstattzug 14 der 5 (verst.) Polizei Panzer Kompanie* and *82 Infanterie Division*. The Soviet version of this kit has five marking options - Tambov Kolchoznik of Second Tank Corps in December 1942, Colonel Sadovski's Tank Brigade in January 1943, First Guards Mechanized Corps in December 1942, and two other, unidentified, units.

Assembly of this kit is very simple and straightforward, but the instruction sheets are the best I have ever seen. Printed in colour on high quality paper they have first-rate colour views of each marking option and crew figure. In the German version the instructions even contain several wartime photographs of T-70s in German service - really useful if you want to model a real vehicle. Other manufacturers, take note! Different views of surviving vehicles would be useful too…

There is very little to criticize about this kit unless you have been spoiled by the low prices, etched parts, metal barrels and choice of tracks provided in the outstanding recent releases from Dragon and Trumpeter. Some of the hull access plates on my example had very minor sink marks. The pin marks on the track are a nuisance - as are the ones on the inside of the turret hatch. The exhaust pipes running from the hull to the silencers lack the asbestos wrapping seen on the original. There are a few rivets and bolts missing and the gap between hull plates is marginally too pronounced. But this is all petty stuff. The only thing I'm unhappy about is that the kit is too neat, with none of the sloppy welding, crudely cleaned-up castings and rough cut plate you would see on a mid to late war Soviet AFV. In any case, it would be easy to overdo this on such a small model. If things like that do bother you there are some excellent T-70 photographs at http://tanxheaven.com/krzo/t70tanklight (a very early T-70M at Poznan without hatch periscopes) and http://svsm.org/gallery/T-70 (a late T-70 at Kubinka) - neither are of the same vehicle featured in these kits but show the weld marks and plate cuts very well.

So. Nice one MiniArt …looking forward to the next release!

Terry Bodiam

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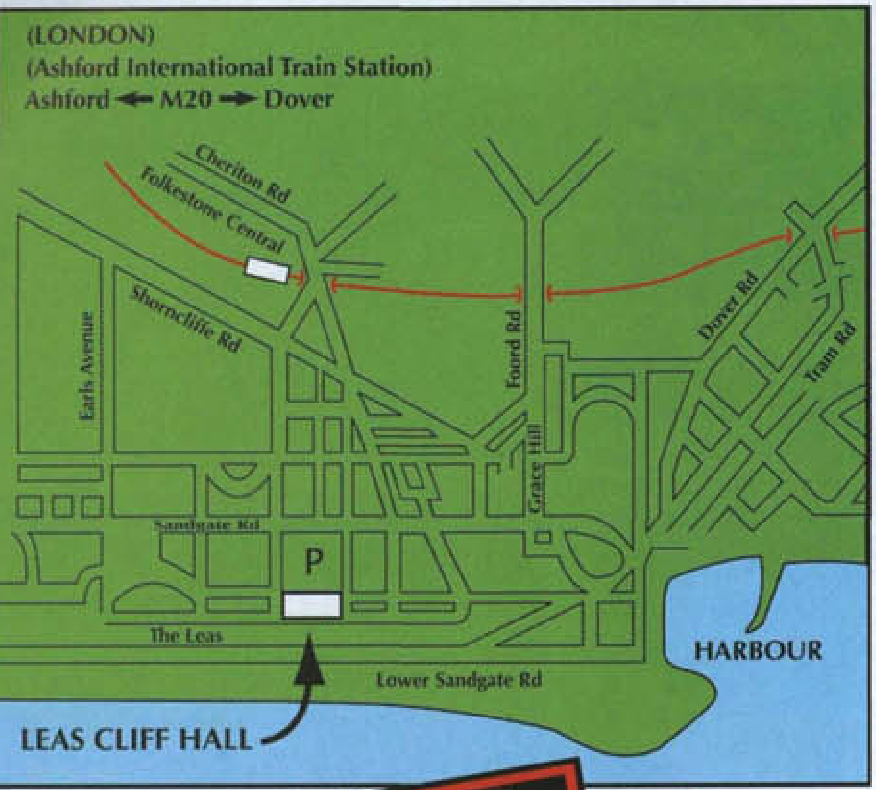
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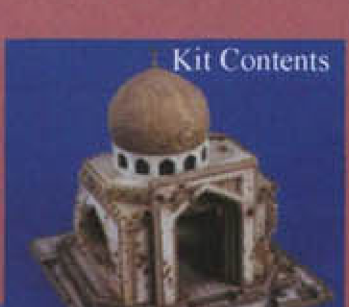

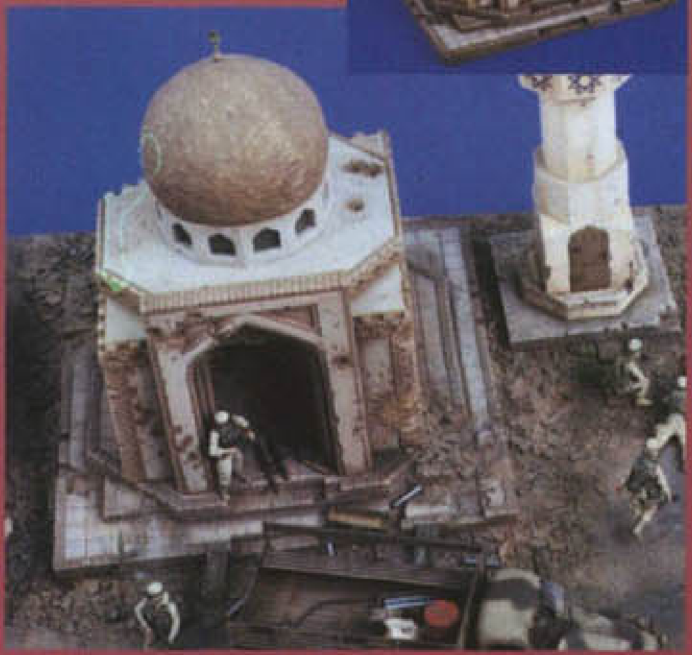

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